Gleanings in Bee Culture

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GLEANINGS IN BEE CULTURE

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STRAY STRAWS
by Dr. C. C. MILLER

A. A. ASHLEY, p. 698, tells word for word how I worked the Alexander weak-colony plan this spring except some slight difference in length of time. It was an entire success.

FEELING GOOD over the Illinois local-option law passed May 8. James K. Shields, of the Illinois Anti-saloon League, who led the fight for local option, said: "It is a great victory. When the Berry bill is placed on the statute-books of Illinois, we shall have secured, after six years' fight, more local option than Ohio has gotten in fourteen years of continued effort.

IN SPITE of the peculiar way in which *The Far-Western Bee Keeper* locates the hyphen in its name, that occidental youngster starts out in such a wide-awake manner that one can't help thinking that, if it doesn't live, it ought to. Here's success to it at a venture. [We join in your good wishes. But Stenog says that hyphen is all right where it is, but another one is needed in "Bee-keeper."—ED.]

STENOG, you say French spelling is more difficult than English, p. 686. I don't believe it. Even if it is, does that alter the fact that English will more quickly become the world's language if its horrible spelling is reformed? [What I meant to show, doctor, was that exceedingly irregular spelling would not prevent a language from being the court language of the nations of the earth, as the French language shows The marvelous spread of English in the last fifty years is due to its simplicity as a language and the colonizing spirit of England and the United States.—STENOG.]

HERR A. STRAEULI, editor of *Europæische Bienenzucht*, the German apostle of American methods, is enthusiastic over what he calls the Scherzinger plan for preventing increase. When a colony swarms, the swarm is hived in a lower story over which an excluder is placed, and over this the old hive with its brood, all queen-cells being removed. That's the end of all swarming, and the whole force is kept intact. It will be seen that it is much the same as the Demaree plan, only Herr Straeuli waits till after the colony has actually swarmed. Where one is on hand to hive swarms, what better way could there be for extracted honey?

GLAD TO ANSWER your question, p. 686, Mr. Editor. The phrase "dual plan" or "dual-queen system" has so far been used to mean the plan of having two queens in a fertilizing-hive—one a virgin in a cage awaiting the removal of the free queen. This plan is so important, and likely to be mentioned so often, that it is better to let the word "dual" designate it instead of the 23 words I have used in describing it. Then in any other case of two queens in a hive, as mother or daughter, say "two queens in a hive," or use some other wording; but don't use "dual" for any but the one specific thing. [It will be difficult, doctor, to make our language always exact. If some one else has continuously used the phrase "dual-queen system," referring to something different from that to which you refer, you will have a hard job in changing him over; and some of them get mad when we take liberty with their manuscript, averring that they know what they are talking about. We do not see but we shall have to continue to use a good deal of circumlocution as heretofore.—ED.]

C. S. LORD has sent me some spacing-nails that are probably ahead of any thing else in this country—merely a wire nail with a head ¼ inch deep, sugar-loaf shape, so that if an uncapping-knife should strike it the blade would slide off. For any other than extracting-frames a head with perpendicular sides would be better. Even for extracting-frames this head would be all right with perpendic-

ular sides, as it is made of type metal, which would hardly dull a knife. [The oft-repeated objection to metal spacers, to the effect that they will interfere with the uncapping-knife, exists more in the imagination than in fact. There are not wanting extracted-honey men who use metal spacers of various sorts; and when we have talked with some of them on the question whether they dulled the uncapping-knife edge on these spacers, they ridiculed the very idea. One of them in particular made the remark that "any one who would dull his knife on a small projection at the end of the frame must be a blundering manipulator." Unless some one will actually testify that the metal spacers make uncapping difficult and annoying, let us scatter this man of straw to the four winds. —ED.]

I DON'T KNOW whether worker eggs are fertilized by the will of the queen or automatically. But I want to enter a protest against what is generally considered as a knock-down argument against the automatic theory. It's given something like this: "The claim that the smaller size of the worker-cell compresses the abdomen of the queen, automatically fertilizing the eggs, is shown to be groundless by the fact that, when a queen lays eggs in worker-cells not more than ⅛ inch deep, there can be no compression, and yet the eggs are fertilized." Good friend, you must know that there is no real squeezing of the abdomen, either in a worker-cell or a drone-cell. The worker cell is a trifle shallower than the drone-cell. May not that difference in depth cause such a difference in the position of the queen as to produce fertilization in the shallower cells? And would not fertilization be expected in a still shallower cell? Did you ever know drone eggs to be laid in drone-cells only ⅛ inch deep? I don't think I ever saw such a case; but I may not have observed closely enough. [If any one *knows* of actual cases where a queen has laid eggs in shallow drone-cells, such cells producing drones and not workers, let him hold up his hand. With our over 30,000 subscribers there ought to be some among the number, if the thing has ever happened, who can certify to the fact.—ED.]

E. E. HASTY, who has been trying the curative effect of honey in considerable quantities, complains that "the naughty foundation-man" puts in soap in tastable quantities —doubtless a serious bar to the eating of large quantities when the appetite is skittish, as invalid appetites are pretty sure to be." If this be a just charge, "the naughty foundation-man" should be strung up by the thumbs until he promises to be good. [We heartily subscribe to the doctor's statement; but we do not believe that the charge can be sustained. By the modern method of continuous sheeting, very little soap, comparatively, is used. But when one attempts to make his own foundation, dipping the sheets into short lengths, he finds it necessary to use a large amount of soap in order to pick off the numerous ends from the rolls when many short sheets are to be milled. There is, therefore, a marked difference between the amount of soap used in the factory-made article and the home-made. We venture to say there is no more soap on ordinary factory-made foundation now than there is on an ordinary teaspoon that has been washed in a strong soapy solution and then wiped on a table-cloth that must necessarily have absorbed a considerable amount of liquid soap. —ED.]

TO TEST WAX, says *Deutsche Bienenzucht*, write on a cake with ink. If the writing is clean, so is the wax. If irregular, the ink bunching in little drops, some sort of fat is present. I've just tried writing on wax. While it isn't as good as paper, I was surprised to find how well one can write on it. [When we first read this over we felt inclined to believe we had an excellent test for wax containing grease We accordingly went over to our wax-working department, where we keep small samples of various kinds of beeswax adulterated with various ingredients with which to compare doubtful specimens that are sent in. We tried writing with a pen and ink on pure beeswax, and, as the doctor says, we were surprised to see how well the ink flowed. We then tested the same pen and ink on a specimen half beeswax and half paraffine. The ink flowed quite as well. We next tried it on a cake of wax containing a large per cent of grease; and, contrary to what we expected, we could write about as freely on this as on the cake of pure beeswax. If the grease were unevenly distributed in the wax, then we could conceive how there might be a break in the lines of ink; but the test would be, according to our experience, very unreliable. Wax containing grease *looks* greasy on the outside. It does not have that clean hard lustrous surface like pure wax. Our boys have come to be quite expert; and occasionally we get a shipment from which we have to reject a large part.—ED.]

TALK NOW is that the pure-food law will run out of the market the present bleached sugar, and give us a better article of unbleached at a lower price: also that, when the same law prevents paraffine, ceresin, etc., from being sold as beeswax, the price of beeswax will go up. Now, if sugar goes down enough, and wax goes up enough, and there comes a year of failure, instead of letting the bees lie dead idle why not set them to turning cheap sugar into beeswax?

[It is doubtful if white sugar can now be driven from the market, even if it contains injurious matter, as housekeepers generally are prejudiced in its favor. But we beekeepers need not be prejudiced. Yellow sugar, excellent for bee-feeding purposes, can be obtained for less money because not controlled by the trust. It is refined but not bleached. It has been proven by Huber, Milne-Edwards, and others that raw sugar produces much more beeswax than white sugar. This looks reasonable, as the sugar-cane plant secretes a very nice wax. What

is usually mentioned as "raw" sugar is brown sugar from molasses, and is not fit for bees.—W. K. M.

Referring to the other question, that of making wax out of sugar, we may state that this is no idle dream. Beeswax is bound to come up. Paraffine will be barred from foods and drugs when the pure-food law goes fully into effect, which will be next fall; then we ought to see a marked advance in beeswax unless the tropics (as they probably will) furnish the product at a price that will not be much in excess, if any, over the article now sold. Some tropical beeswaxes, at least, conform in every particular to the pure beeswax specified under the national pure-food law, and there is no reason why they should not.—Ed.]

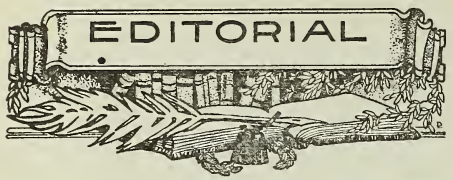
"To make a practical application of the idea is new." That footnote, p. 686, sounds as if I had thought there was nothing new in the Alexander double-queen plan. I hasten to protest most earnestly against any such view, and the Straw next to the last on the preceding page ought to set me right. All the more credit is due Mr. Alexander that facts which had been kicking around for years he picked up and put to good use. But more credit than that is due him. The knowledge that several queens might be in a hive at the same time is not new. The knowledge of how to get them there at will is new. Set that down to Mr. A.'s credit. Set down to him a vastly greater credit for the entirely new discovery that a plurality of queens in a hive will prevent swarming. If Mr. Alexander makes good in telling us how the thing is done—and I presume he will—he will leave his name written high up among those who have benefited their fellow bee-keepers. [But there are others now who claim that a plurality of unrelated queens will keep down or control natural swarming. Speaking about our friend Alexander, it takes a man of about his standing and stamina in the apicultural world to be bold enough to come out and espouse an unorthodox theory or practice. There have been some in our ranks who, metaphorically at least, would have been very willing to burn him at the stake for telling some things "that are not so;" but somehow he has been able to hold his own against all his critics. And right here it is proper to explain that those who do not agree with him should take into full consideration his particular locality, which in many respects is unlike the average locality in the United States.—Ed.]

Louis Scholl asks, p. 692, why the bees gnaw around the splints, filling the space with drone-cells. I don't know; I never had a case of the kind. Perhaps Mr. Smith's answer is the right one. Possibly the splints were pressed too hard, cutting the foundation in two. What's your answer, Louis? My trouble is a different one. Most of my frames were given when pasturage was poor, and the bees gnawed away the foundation more or less next to the bottom-bars, before drawing it out. [You remember, doctor, we have never been enthusiastic over these wooden splints, just because we feared the bees would gnaw around them. Our fears were based on our experience with the metal tin bar that we used years ago in our first wired frames. Any thing larger than a 32 wire seems to be met with disfavor on the part of the bees at times.

Referring to your particular difficulty, the whole trouble can be solved by the use of reversible frames. This vacant space between the bottom edge of the comb and the bottom-bar is likely to be more or less in evidence in all frames of the non-reversing type. While you overcome it to some extent by means of vertical splints, yet you admit that the bees "gnaw away the foundation more or less next to the bottom-bar." By having reversible frames (this vacant space that is just so much waste, and the finest hiding-place in the world for queens) can be filled up solid. This used to be the strong argument of the reversible-frame advocates of twenty years ago—yes, almost twenty-five now; but when reversing did not accomplish *all* that was claimed for it we went to the extreme and abandoned the whole business, just as the owners of Belgian hares abandoned the business, because it did not come up to the expectations of those who pushed the fad to the front; yet Belgian hares have some merit.—Ed.]

Prof. Cook says, p. 312, that bees ventilate so effectively at the entrance that it is best to have only one opening to the hive, evidently meaning at all times, and W. K. M., page 686, asks if I subscribe to that doctrine? Emphatically, no. If running for extracted honey I would, in general, have one more opening than the number of stories in use—the regular entrance, and an opening at the top of each story. Each year, for years, I have had one or more piles thus ventilated, and none has ever yet swarmed. Many years ago I learned from Adam Grimm to have an opening for ventilation at the top of the brood-chamber at the back end when running for comb honey. I gave it up because it interfered with the finishing of sections near such openings. But I have gone back to it again, believing that such disadvantage is overbalanced by the gain in ventilation. You can't make me believe that it isn't easier for the bees to have one hole for the air to go out, and another for it to come in, than to make the air go both ways in the same hole. [There are quite a number now who advocate the use of more than one entrance. Among them are Mr. R. F. Holtermann, the Dadants, and Mr. W. K. Morrison, of our own editorial staff. Your last sentence, doctor, suggests a proposition that indicates that our present-day practice of giving bees only one entrance compels them to waste a large amount of vitality and energy as well as bee-life when it can be ill afforded. If we can prevent this loss (we can hardly see how it can be other than a loss), why shouldn't we do it by breaking down our old orthodox lines at this point and make it mechanically easier for bees to keep down the temperature of the hive instead of keeping a lot of workers at home

fanning to keep the house cool enough in order to carry on the work of the hive? Then there is another important advantage to be gained, and that is, the reduction of swarming and a corresponding incease in the honey-crop —ED.]



THE following, received too late for our last issue, will explain itself:

Dear Sir:—I beg to announce to you that the apicultural investigations of this Bureau are now in charge of Dr. E. F. Phillips. I would also announce to you the appointment of Dr. G. F. White as an expert in bacteriology; Mr. Franklin G. Fox as assistant in the apiary, and Mr. Burton N. Gates as colaborator in Massachusetts.

C. L. MARLATT,
Washington, D. C. Acting Chief of Bureau.

EXPERIMENT STATIONS IN CONNECTION WITH IRRIGATION PROJECTS.

SENATOR WARREN has introduced a bill in the United States Senate providing for an experiment station in connection with each irrigation project undertaken by the government. At this distance this looks like a good idea; for some people are going to these irrigated lands who know next to nothing about irrigation, and some one ought to be on hand to advise "tenderfoots" how to get the best results from their land.

In connection with each of these stations there ought to be a person who understands bee-keeping who will warn newcomers when the locality has become overstocked with bees or will bear no more. The advice of a bee-keeper would be useful also in putting out bulletins.

DOCTOR WILEY IN THE CABINET.

Dr. Harvey W. Wiley has been suggested as a member of the "strenuous cabinet" in the interests of pure foods, etc. The Department of Public Health would be the likely designation of the new branch of the cabinet, and while this may seem to be a small matter to those who are interested in diplomacy, and the progress of war and the exploitation of foreign lands, it is something which very vitally affects every individual of the great American family.

Dr. Wiley has been the most instrumental factor in securing the pure-food law; but the country has been very slow to awaken to the fact that this question was something which affected vitally every one of its members. Doubtless there are many organizations, cloaking themselves under the title of "pure-food associations," "honest-label associations," and the like, who, while they would like to be known as strong supporters of the doctor as a member of the cabinet as above indicated, would leave nothing undone to defeat his appointment.

Dr. Wiley is to-day a poor man. He has given his services to the country, and has been mainly instrumental in the enactment of the pure-food law in exchange for a mere living salary; whereas had he listened to the blandishments and force of the great moneyed interests of manufacturers he could, by virtue of his position, be to-day a millionaire.

Advocates of the establishment of the new department urge that there is nothing more important than proper excecution of the various statutes which concern the public health.

GUY E. MITCHELL.
Washington, D. C.

THE suggestion in one of our contemporaries is not so impracticable or far-fetched as it might seem at first thought; for Dr. Wiley, against all opposition, has been a consistent and strenuous advocate of pure-food legislation in spite of the fact that, if he could have been bought off, large sums would have been placed at his disposal. Many a time it has happened that a strenuous official will suddenly and with no apparent reason get over his "strenuousness." Wiley has been strenuous first, last, and all the time.

THE ADVANTAGE OF MORE THAN ONE ENTRANCE IN THE HEIGHT OF THE HONEY-FLOW.

DR. MILLER, in a Straw in this issue, says, in referring to the advantage of having more than one entrance to a hive during the height of the honey-flow, "You can not make me believe it is not easier for the bees to have one hole for the air to go out and another for it to come it than to make the air go both ways in the same hole." This is something for the practical bee-keeper of to-day to think over very carefully. Too much ventilation sometimes certainly is bad; but is there not somewhere a golden mean by which we can relieve the bees of a great load of work? Or, to put it another way, is it necessary to keep a large force of workers at home fanning during the heat of the day if we can by some mechanical means reduce the temperature of the hive, allowing this force to go to the fields? This question will hinge somewhat on whether comb or extracted honey is produced.

A COMPETITOR TO RAILROADS BY MAKING USE OF NATURAL INLAND CANALS.

A STRONG plea is now being made for a large improvement on our inland waterways as a kind of counter-check to the railroads, which have had every thing their own way until quite recently. Much is being made of a plan for an inter-coastal canal to connect the rivers of Texas with the Mississippi River at Donaldsonville, La., and this ought to be done. It is not generally known, however, that our whole coast is permeated with natural canals, so that a river steamer can be navigated from New York to Brownsville, Texas, and yet not use the ocean at all. If this waterway is improved and shortened so that the largest river-boats can use it we shall have a splendid means of reducing freights. Not only so, but a waterway is excellent for the transportation of honey and bees — far ahead of the best railroads. If this is carried out in its entirety it would be quite possible to ship honey or bees by river-boat at Corpus Christi, Texas, for direct shipment to Washington or Baltimore, or even St Louis or Chicago. No product of the farm requires greater care than comb

on its way to market. Water transportation is immensely superior to railroads in cheapness; and, moreover, it is better. There is no bumping on steamers to knock the honey-comb to a pulp.

Any business firm that does much shipping of heavy goods knows the immense value of water transport, not only in compelling lower rates but in securing more reasonable treatment from the railroads.

FOREST RESERVES ON GOVERNMENT LANDS; MORE IRRIGATION NEEDED FOR THE GREAT WEST.

THE last Congress, before it passed the agricultural appropriation, added a rider stipulating that, in future, no land should be set aside as forest reserves except by act of Congress. This was a direct slap at the President, who saw the animus of it at once; and, to show his sense of duty to the people, he set aside another large area of the public domain as forest reserves, after which he signed the agricultural-appropriation act.

The attitude of Congress in view of the rapid advance in the price of all kinds of lumber, including hive lumber, is to be deplored. It is to be hoped that some future Congress, less subject to great corporate interests, will rise to the emergency; for if lumber continues to advance much more it will take a little fortune to build a home. It is fortunate we have a President who is too great to be cajoled or fooled by a lot of old-timers who are bossed by private interests.

However it may appear to others, we beekeepers are not particularly anxious to see the public lands of the West cleared off by settlers, and planted to grain crops. On the contrary, we would rather see more irrigation works undertaken by the national government, and any thing of that kind will have our support. There is a movement now on foot to ask Congress for the loan of $300,000,000 to provide for irrigation projects in all the semi-arid States. and GLEANINGS would gladly support any such movement when once it is started, for the irrigated lands certainly make ideal homesteads for worthy people.

That same President will use his great influence to help along this enterprise. Say! Roosevelt is nearly always on the right side of every good thing.

WEATHER CONDITIONS AND PROSPECTS; A STILL FURTHER STIFFENING OF THE HONEY MARKET PROBABLE.

THE season is practically a failure in Southern California. Some of the largest producers in the vicinity of Los Angeles report no honey in sight, and are feeding. While there were good rains, yet subsequent weather conditions prevented the bees from doing much. While some sage honey will be produced in the extreme southern part of California, we are safe in saying that very little of it will find its way to any of the Eastern markets.

Conditions have not been altogether satisfactory for Central California, and we do not expect, therefore, much of a crop from that section.

Weather conditions have improved somewhat for the Northern States; but the season as a whole is still very backward. In many localities the bees are doing exceptionally well in making up for bad weather. Dandelions have yielded honey and pollen as never before; and where there has been any fruit-bloom the bees have done well. Clover and basswood have been put back a a couple of weeks; and if they do not come on too early there will be a chance for a fair crop, for the bees are now making double-quick time.

The spring losses, however, have been very severe all over the country, south as well as north. The Southern States seem to have suffered more proportionately, as they were not as well prepared to stand the bad weather as their more Northern neighbors.

Texas is not saying much, but the few reports are not particularly favorable. In Colorado, conditions have not been satisfactory; and the season in Florida has been a complete failure.

There ought to be a strong stiffening of prices, for the market certainly will not be glutted with honey, and there will be very little glucose concoctions on the market masquerading under the name of honey, to hold down prices. We look for a better market than we have ever seen before.

THE EFFECT OF THE NATIONAL PURE-FOOD LAW ON THE MAPLE-SYRUP INDUSTRY.

THE following excerpt from the *Louisiana Planter* of May 18 bears out in a remarkable way what we have been saying to our readers for some time anent the working of the national pure-food law. What is said herein will apply to honey as well as maple syrup or maple sugar.

VERMONT'S CROP OF MAPLE SUGAR.

The national pure-food law is working wonders for the maple-sugar producers, acting largely as it does as a guarantee of the purity of the products offered as genuine maple sugar and syrup. Vermont is the chief sugar-producer, and it is estimated that in that State the total output will reach 20 millions of pounds of sugar and syrup combined. The general price for the genuine article during the last few years has been from 8 to 12 cents; and now, with the increased demand for it, owing to the probable purity of all that is offered, the crop is bringing from 15 to 20 cents per pound. At 15 cents per pound the maple-sugar crop of Vermont will amount to about three millions of dollars in value, or as much money as the Louisiana rice crop has brought until within a very few years.

Of course, the delightful flavor of the sugar and syrup made from genuine maple sap accounts for the fact of its bringing three or more times the price of cane sugar per pound. It accentuates the fact, however, that there is a large demand for genuine cane syrup and cane molasses in the United States, and a demand that could be doubled or tripled were the consumers made thoroughly satisfied as to the pedigree of the stuff sold to them. Glucose skillfully made, and practically neutral in flavor or transparent in color, has been the foundation material from which any quantity of maple syrup or cane syrup could be fictitiously derived. Just as orris root is the flavoring element in the manufacture of low-grade raspberry syrups, so hickory bark and other materials create the maple flavor which for years has disguised the glucose products, and apparently made them acceptable wherever they were offered for sale.

Whenever sold in competition with pure goods, of course the adulterated goods undersold them; and the uncertainty attaching to all liquid sweets led many dealers into the purchase of the imitation article as being really more satisfactory to their trade at the prices at which it is offered than would be the genuine article. The assurances that the consumers will now have under the pure-food laws, if they take sufficient care in their purchases, will seemingly warrant them in buying as genuine such maple sugar and molasses as will be offered to them.

While Vermont is the largest maple-sugar producer in the country, there are also other sections that are large producers; and on the basis of 15 cents per pound it would now seem that the maple-sugar crop of the United States will reach a total value of five or six millions of dollars. We are inclined, however, to doubt to some extent the maintenance of the 15 to 20 cents value per pound for the entire crop; but we shall sincerely hope that such prices will be maintained, in order to induce the maple-sugar makers to supply consumers with the genuine article.

THE OUTLOOK FOR THE SYRUP AND HONEY TRADE.

UNLESS all signs fail, the market for honey this fall will be higher than it has been for some time, for very good reasons. The maple-syrup market was in fairly good shape, and the price is very high. The syrup market also seems to be in a bad way, but for very different reasons. Hitherto glucose and molasses (or cane syrup) were blended and sold as "corn syrup," and the glucose people have flattered themselves this would be continued for a long time to come. It is evident the Department of Agriculture at Washington regards both products as detrimental to the health of the persons who eat them. No action has yet been taken by the Department to declare them so, but it is evident it is only a question of time when both will be barred.

The experience of the Corn Products Co., in New York, Pennsylvania, and other States, goes to show what is coming when the national pure-food law is actively put in force. It is evident that the federal authorities are not going to be more lenient than the individual States have been. The people have, however, been reading up on this matter, and a great many are refusing to buy these syrups, law or no law. It is evident, also, that the glucose trust is preparing to give up the struggle, and some of their products are said to be entirely withdrawn from certain States.

The cane-planters in Louisiana realize that the days of common molasses are numbered; and the *Louisiana Planter*, the leading paper of the cane-sugar industry, thinks it would be advisable to go back to the old open-kettle process, and to feed the present-day molasses to mules and cattle.

It is perfectly clear from this that the days of cheap syrup are over, and in its place a much superior product will appear in due time. A sugar organ, *The Federal Reporter*, says, "The demand for molasses has been somewhat curtailed by the agitation regarding the national pure-food law," and that is undoubtedly true.

It is evident from this that honey will have less competition than it has had for some time; for, with the exception of maple syrup, of which there is a small supply, it is the only syrup which completely complies with all the requirements of the national pure-food law.

MISBRANDING; HONEY-DRIPS.

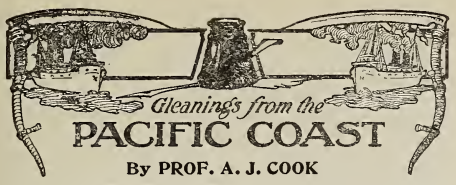
A SHORT time ago a company was selling what it called a "cereal coffee." The United States Department of Agriculture, so we are told, ruled that such a branding was contrary to the provisions of the national pure-food law; that the word "coffee" forming a part of the label could not be used to designate a certain drink unless it contained a fair percentage of coffee, and it contained *no* coffee.

Another case, somewhat similar to this, has come up recently, in which the manufacturers of rye flour desired to know if they could use the name "rye flour" to designate a product largely rye flour, but containing a small percentage of wheat flour, which could be worked more easily than the pure article.

The Department ruled that such name could not be used unless it were qualified by adopting the name "rye-flour compound," "rye-flour blend," or "rye-flour mixture;" and then only when the two ingredients can be regarded as like substances. "It is further held that the use of an ingredient in small quantity, simply for the purpose of naming it in the list of ingredients, would be contrary to the intent of the law, and therefore that the ingredients must be used in quantities which would justify the appearance of their names upon the label. The statement made of the constituents used should be of a character to indicate plainly that the article is a compound, mixture, or blend. It is evident from the above explanation that the naming of a mixture of this kind 'rye flour' would be plainly a violation the law and the regulations made thereunder."

More recently a case has come up that bears more directly on the honey business. It is this:

A correspondent in the South refers us to a food preparation having a beautiful label in colors bearing the words "Honey-drips." Just below these words appears this: "Cane syrup, 15 per cent; corn syrup, 85 per cent." Note that honey is not mentioned as an ingredient. The label shows a beautiful sprig of apple-blossom; and the inference is that these honey-drips come directly from these blossoms. Now the question comes up right here, "Can this article be named *honey-drips* without violating the provisions of the law, even if the percentages of glucose and cane syrup are given on the label?" Apparently not; for honey does not enter into the composition of the article in even a small quantity. To simmer the whole thing down in a nutshell, Uncle Sam apparently does not propose to allow anybody to use the word *honey* to designate an article that contains no honey whatever. It must be largely honey; and if any other ingredient was used with it, it would have to use the word "honey-compound" or "honey-blend" or "honey-mixture." Our dear uncle has ruled rightly.



By PROF. A. J. COOK

PEAR-BLIGHT.

It has just been my pleasure to visit the great pear-growing sections of northern California. As is well known, these orchard counties (and they number nearly all of the northern counties of our great State) have reaped great profits from the pear industry. Until quite lately, nearly all the orchards have been very healthy. If we may except the codling moth, scarcely any evil menaced the success of the pear-grower, especially if there were bees hard by to perform the work of cross-pollination. True, the pear-orchards near Fresno were wiped out by this same pear-blight some years ago; but for the most part the pear was a sure winner, and the luscious Bartlett was so melting and delicious that it had an almost unlimited sale at very high prices.

A few years ago, as our readers know, the blight broke out in many of the orchards. It is a curious fact that it seemed like the grip a few years ago—it attacked the orchards in nearly all the pear-growing regions, hardly an orchard escaping. This is a bacterial or germ disease, and we now know the specific germ that does the fell mischief. It works and does its poisonous work in the juices of the tree, and must be transferred from one tree to another in a liquid or semi-liquid medium. It works on other rosaceous trees like the apple, wild crab, etc., and even on the loquat, which, though of the same family, seems quite different from the apple and the pear. It seems that the germs of the disease must be carried in a liquid. The disease is carried then when the trees are in bloom, in the nectar, and at any time, probably, in the resin of the buds and in the gum. I think the people have become convinced that they would have the disease, and that it would spread just the same were there no bees, as there are enough other insects to do the evil work.

UNITED EFFORT.

We have just had, the past two years, a splendid example of how the people ought to work, and what excellent results will be gained when State and government act in fullest unison. Prof. Ralph E. Smith, working for the State, and Prof. Milton D. Waite, working for the Department of Agriculture, have been working with the orchardists in fullest accord, battling this pear-scourge. They have gone far enough to show that the blight can be overcome if the fruit-growers will only act with the energy that the importance of the matter demands. As is well known, the leaves wilt and become discolored, as if the twigs were broken. Thus it is easy to see when a tree is struck with the disease. Again, the bark hardens and becomes close to the wood, and dry. The wood is also discolored. The work is both winter and summer work. In summer all twigs that show wilt are at once cut off much below the wilt to be sure to get all the germs. After the knife or clippers are used to cut the twig they are dipped in some disinfectant before they are used again. This pruning can not be too closely looked after. It pays to get a man, if the orchard is a large one, especially to watch and prune. In fall and winter the trunk and main roots are gouged out with a chisel; and if the suggestive stain is seen, then it is known that the whole tree is affected, and all the tree is dug up and burned. It is not a long chore to inspect a tree, and it will pay well to be very thorough. In case the work is done as it should be, the orchard will not likely lose many trees. I find that those that have been the most careful are the most hopeful. One man who has taken hold of the matter with great energy told me that he would not have any fear of complete success if he could only get his neighbors to act with the same vim that he is showing. The trouble is that, a single tree omitted or undiscovered, will, when it blossoms out, become a center of infection for a large area. The fact that many will let their orchards go will cause the loss of the same, and the effect will be to raise the price of pears; and so very likely the man that works hardest to keep the enemy at bay will be really a gainer, and get more in addition for his crop than the fighting has cost him.

I was much pleased to find that the fruit-growers are well aware of the great good that the bees do in pollinating the bloom. Nearly all of the leading fruit-men know and openly recognize the fact that they owe a great deal to the bees, and could not meet the best success without them Some of the fruit-men have even hired bee-men to bring their apiaries into the orchards.

LOSS BY FLOODS.

There have been some very serious floods along the Sacramento River. Many of the tracts are called "reservations," and are leveed at the general expense of those protected. Several of these reservations are flooded, and in many cases whole apiaries in the flooded regions are ruined. The water was never so high before. I had 75 acres, half in asparagus and the rest in alfalfa. It is now all several feet under water. Of course, the crop will be ruined this year, and it will cost much to repair the levees; but the land will be enriched, and it is so immensely productive that we can afford to lose an occasional crop, and yet be ahead. Of course, if it could have been foreseen, the bees could have been carried to higher land, and saved.

HONEY FROM THE ORANGE.

To-day is warm, and the bees are making merry on the orange-bloom. We can not ex-

pect much honey generally from the orange, as the bees have not bred up much as yet, and so are not strong enough to get any considerable stores from this orange-bloom. There are, however, two points of gain in this orange honey. It is a very fine grade, none better, and it comes in a time when it will do much good in stimulating the bees to work. For the past few days the whole air has been perfumed by the orange-bloom, and we may easily imagine what a gain the bee-keeper would receive were the bees strong in numbers, and had we many warm days in which they could gather. We have had many cold days, though for a whole week the bees were out in full force every day.

WEALTH OF BLOOM.

We have had the finest winter rains in Southern California that I have ever known. We now have had 25.25 inches, and we may well believe that we shall yet have some more. As a result, the flowers are splendid. One can not describe the beauty that hangs over field and roadside at this time. The phacelia, so much prized in Germany, and which is native here, is out in all its glory, and the bees are just swarming on it. So of many other wild flowers. The sages are growing rapidly, and promise great things.

THE DOOLITTLE SYSTEM OF HONEY PRODUCTION.

So many good and profitable articles have appeared in GLEANINGS the past year that it hardly seems fair to commend freely one and not even mention others of equal merit; yet there has been one series of articles that have especially interested me that calls for our attention at this time. I suppose one reason why they have been of so much interest to me is that I have probably given the subject of swarm control more thought and study than any other one thing connected with bee-keeping I refer to the articles by G. M. Doolittle, entitled, "A Year's Work in an Out-apiary."

I was much pleased recently to learn that these articles are soon to be placed in book form for the convenience of bee-keepers. It is not that I believe that every one will succeed as well as Mr. Doolittle has done, but I believe the principles he lays down are sound and solid, and well worthy the careful study of every person interested in keeping bees for profit or pleasure.

Mr. Doolittle seems to work with one end in view from early spring till the maples crimson; viz., to secure the largest possible crop of honey, and then leave his hives in the best condition for the next year's work. And may it not be well for us who are interested in the same object to review at this season some of the rules or maxims that he lays down for securing a large crop of honey?

In the first place, he recognizes the fact that, to secure a large yield of honey, each hive must have a great army of workers of proper age for outdoor labor just when the flowers yielding the most honey come into bloom. To secure this great army of workers after a colony has been well wintered and nicely tucked up in spring, there is, perhaps, no better way, where there is a short flow of honey from natural sources, as is almost always the case in our northern climate, than to feed daily, as Mr. Alexander and some others do; but as Doolittle is writing of an out-apiary where daily feeding is impractical he does the next best thing—keeps each hive stocked with an abundance of honey in the comb. After one has noticed how much more rapidly a colony with ample stores will build up in spring than one equally good at the start, but with insufficient stores, he is prepared to appreciate this method.

Later, another problem presents itself. How shall the rapidly increasing number of bees be kept contented, and not swarm, until it has reached its highest point of efficiency, so to speak, and the "honey harvest" is at hand? He solves this as easily and skillfully as other problems. At just the right time he doubles the hive capacity, and, instead of ten combs, the hive now has twenty with an abundance of room for storing any surplus from fruit-bloom, or if, as is often the case, there is little or none, there is in these extra combs enough old honey to keep up brood-rearing at a rapid pace during the time from apple-bloom till clover opens—the most critical time in the whole season. We all know that a very large hive is practically a non-swarmer early in the season: although it may not be of much value later.

Again, as the season advances the swarming instinct is almost sure to assert itself, and the colony seems to lose its ambition for some days previous to the day of swarming, and honey-gathering moves slowly. Mr. Doolittle forestalls this condition by quietly removing most of the brood and half the combs, giving abundance of room in empty sections with some baits, so that the colony is not only not discouraged, but is stimulated to the utmost to make good the loss of their brood and honey by this unexpected robbery. And it would seem as though the bees in this way are satisfied to work on to the close of the season without even making an attempt to swarm. Had this little *coup d'etat* of the master been delayed until the swarming fever was high, less satisfactory results would have been secured as more time would have been required before the colony would be satisfied and contented. Had not brood-rearing been rapidly pushed forward during the early spring, the colony would have been too weak in numbers to secure the best re-

sults, although swarming might have been prevented.

Now, while these methods are, I believe, sound to the core, and could be carried out in detail where the seasons are very similar to those in Mr. Doolittle's locality, yet in other places, where conditions are different, the details must vary to suit the ever varying conditions with which the bee-keeper is surrounded. For instance, he secures a large amount of partly filled combs of honey for spring feeding from buckwheat, as well as many new combs drawn out or built entirely new, while here I have known but one or two seasons in forty years when any new combs would be built by the bees, or even old ones filled partly full at this season. Even the basswood has failed for several years past to give us any considerable amount of honey. The season for honey is very short—from two to six weeks on clover. The average is not more than three or four, and much of this time only a moderate flow.

The necessity for strong colonies is quite as great as with Mr. Doolittle, or even more so. We have few combs of honey with which to feed and build them up as he does. We might feed sugar syrup heavily in the autumn; but should there happen to be a good flow of early honey, and we shook bees on to these combs with sugar syrup, they would be likely to carry more or less of it up into the surplus combs, thus injuring its flavor and our reputation at the same time.

During the past season I had some section honey injured from old honey in brood-combs on to which swarms had been shaken. We might buy cheap honey from the South to feed, but the danger from disease and inferior quality still would make it impracticable.

A better way would be to use our weaker stocks for filling a sufficient number of combs to lay by for spring feeding.

While the storing of his surplus combs in the open is a success with him, I fear it would be wholly impracticable in many places, notwithstanding the bee-keeper had given away two or three per cent of his crop to his neighbors, although in some communities it might be entirely satisfactory.

Last season I tried to run a number of colonies on the Doolittle system. I followed his directions, I think accurately, except that I used eight-frame hives instead of ten, as he does, and, as nearly as I remember, about one-third prepared to swarm after their brood was removed. I attributed my lack of success to the small brood-chamber I used. If so, this shows how careful we should be in following all the directions of any given system before we are able to judge accurately of its value.

I shall try again another season, following his directions to the letter so far as I am able, and I wish many other bee-keepers would do the same until we have fully mastered this perplexing problem.

It seems to me that if others can make it work as well as Mr. Doolittle does, it is the most practical method of swarm control that has yet been published. Yet other methods before us should not be overlooked, as they too may bring success or lead in that direction.

FEEDING BACK.

"I have 21 colonies of bees now, but expect to increase somewhat as I can care for them. I wish to work two-thirds of my colonies for comb honey, and the other third for extracted. The extracted honey I wish to feed back to the comb-honey colonies, as comb honey sells the best here. I thought that, by extracting from one-third of them and feeding it back to the rest, I could produce more and better comb honey than in the usual way. My trouble is this: The white clover shuts off so quick that I can't get more than half of my sections finished up, and I have to take them off partly filled or leave them on to be finished off with buckwheat, which spoils the looks and sale of the sections for white honey. Hence I wish to feed back the white honey I extract, to finish up those partly filled with clover honey; and I want you to tell what is the most practical feeder to use in connection with this work."

"I do not know that it makes very much difference as to the feeder used, friend R., only something which will hold enough so the feeding can go on rapidly."

"Where should the feeder be used—on top of the sections or bottom of the hives?"

"I have tried both ways, and I did not see that it made much difference, though I rather preferred the bottom feeder."

"Well, tell me how you did it."

"I used a common four-quart milk-pan for a feeder, using a float of very thin wood with a lot of holes bored through it. Over this float was thrown a piece of cheese-cloth, which allowed the bees to go on top of the feed, with no danger of drowning. If this feeder was put on top of the sections, a few pieces of sections were set up against the side of the pan, so that the bees could run up on them; or the cheese-cloth was cut large enough so that the corners hung down and touched the sections which the pan rested on."

"How did you keep the outside bees from this feed?"

"By setting an empty super over the sections, and putting the cover to the hive over this empty super."

"Why did you use such pans?"

"Simply because we had plenty of them at our house. They are no better than any dish that will hold three or four quarts. Any old thing which can be spared from the house that will hold the feed is as good as these

pans, and, in my opinion, just as good as to buy or make feeders especially for this purpose."

"How did you fill these feeders the second time when the bees were in them?"

"I took off the cover, and with the smoker I drove the bees off one edge of the cheese-cloth, when that edge was raised up, the feed poured in at that side, and the float would be raised by the poured-in feed, together with the cheese-cloth and bees which were on it, till the amount I wanted in the pan was given, when the side I had raised was put back where it belonged and the cover put on again."

"When you fed at the bottom, how did you do that?"

"I took the back cleat off the bottom-board of the hive, and this same cleat off another bottom-board, when this last was put up, back to back, and level with the bottom-board of the hive the colony stood on, when an empty super was set on this last-prepared bottom-board, and a cover on top of that. This left an entrance the whole width of the hive under the back of the same, and into this empty super, into which the bees could come for the feed as soon as the pan of feed was placed therein. As I said before, this seemed the most natural way for the bees to take and carry the feed; but so far as I could see there was very little difference in the results, and very little difference in regard to the amount of labor that had to be performed."

"Did you feed the honey as it came from the extractor?"

"No. The honey must be thinned to about the consistency of nectar as it comes from the fields to secure the best results. If the feed is too thick the bees will gorge themselves till they become sluggish, and the work goes on slowly. With thin feed the bees carry and evaporate it very nearly the same as they do nectar from the fields, though you are to do the feeding at night, so as to insure against robbing."

"Would feeding back work with your plan of swarm control as given in your serial in last year's GLEANINGS?"

"Just as well as with other colonies, though if you work your bees as there given (and more fully given now the serial is published in book form, through additions thereto), you should have very few unfinished sections at the end of the clover harvest; and I doubt about feeding back being a paying operation except to finish up unfinished sections. I did not have enough unfinished sections left over from last year to give me the needed baits for this year's use with the same number of colonies so worked last season."

"In your opinion, which are the best bees for comb honey?"

"All things considered, I believe a good grade of hybrids the best."

"What kind of cross do you mean by a good grade of hybrids?"

"I mean the first cross between the best Italians and the common black or German bee."

"But are not such very cross?"

"Yes, the larger part of them are. But you did not ask any thing about their temper, but which were the *best* bees for comb honey. And adding a little to the best part I will say that years of experience at the out-apiary leads me to believe that, the crosser the bees with such a grade of hybrids, the better work they do in the sections, and the more of it."

"But you would not advocate the purchase of hybrids, would you?"

"No. You can not build up in that way, for the tendency is to grow worse. I would use the best Italian queen I could get for the mother, and then let her daughters mate with whatever drones on the black side they happened to, were I working wholly for comb honey, regardless of careful breeding for the improvement of stock. Stock improvement can not be brought about by breeding from hybrids, even though I have to admit that a good grade of hybrids seems to give the better yield of section honey."

"I have a strain of Italian-Carniolan hybrids, and one of leather-colored Italians which have done well for me, both in quantity and in capping of their section honey, though the latter do not cap quite as white as the other. Now, how would it do to raise queens from the former and drones from the latter, so as to produce a strain of bees that would give the largest yield with the whitest capping?"

"That would be all right, if—"

"What do you put that *if* in for?"

"That *if* is about your being able to mate queens that way. If you could control the mating of queens as you can that of poultry, then you could make progress. But with A, B, C, and D raising thousands of drones to where you would raise a score of your dark Italian drones, and all those drones flying with your score, what chance do you think your Italian-Carniolan virgin queens would have in mating one of the drones you want them to?"

"That is an *if*, sure enough. How would it do to raise some early queens from the above colonies, and introduce them into my other colonies at the beginning of the white-honey flow, according to Mr. Alexander, and thus stop swarming? If this plan would work, wouldn't it be easier to stop swarming this way than by your plan?"

"Yes, possibly, *if*—"

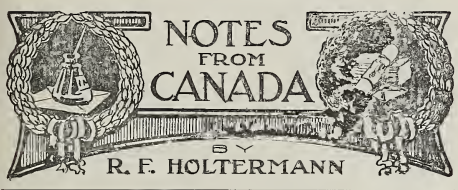
"That *if* again. What about it now?"

"There are two *ifs* in the way now. The first is, *if* your early queens would be good queens, which is very doubtful; for really good queens can not be reared in your locality much before the clover flow begins, to say nothing about having them fertilized, introduced, and laying at that time, nor the spoiling of colonies in raising them thus early. Then the second *if* lies in the fact that a young queen introduced as soon as the old one is taken away does not materially lessen the swarming problem. If a colony raises its own queen at this time of the year, then such a young laying queen is a sure preventive of swarming, but not where a young queen is introduced in such a way that there

is no practical break in brood-rearing. This is a fact known by many of our best bee-keepers who have carefully tried this plan."

"Wouldn't it be better for feeding back to extract the honey before it was sealed over than to allow the bees to seal it, uncap, and then thin for feeding?"

"It would, if you were sure it would not sour before you had a chance to finish feeding it. As soon as it began to sour it would be spoiled for feeding to finish up sections. There are lots of things to be taken into consideration when thinking of leaving many of the old beaten paths."



THE HEDDON HIVE.

On page 535 Dr. Miller, referring to the Heddon hive, writes, "A curious thing about the Heddon hive is that more seems to be said in its favor in Australia and Canada than in this country." Without discussing the merits or demerits of the Heddon hive, let me whisper to Dr. Miller that, aside from the apiary of F. J. Miller, London, Ont., I have not seen in my travels a Heddon hive for years. Doubtless there are more, but I do not know of ten men in Canada who have adopted the Heddon-hive system. I am quite sure that not two per cent of the hives in Canada are Heddon hives. I have no doubt that the Heddon hive has its advantages; but whether it has more advantages than other hives is a question which I have not been able to answer to myself in the affirmative.

BEE-KEEPING AT THE ONTARIO AGRICULTURAL COLLEGE.

The Ontario Agricultural College Report for 1906 has just come to hand. The report of the lecturer on apiculture is found on page 211. He states, "In producing comb honey one of the chief labors of a colony is the making of wax. To manufacture this, a high temperature is required, and cool weather quickly affects the work in the supers." The experiment man relates how he packed ten colonies "as if for winter. Comb-honey supers were placed upon the brood-chambers and covered up with six inches of shavings." Later he states, "The honey-flow this year was so scanty that little difference could be discerned between the two lots of colonies; but what there was, favored the protected hives." How many of us would find it practical to have to unpack 6 inches of shavings from our supers, and from the sides in addition, every time we would manipulate the hive? We probably find that, when the weather is so cool that the bees are affected in the super, the flowers do not secrete nectar. This is where the foundation of the trouble lies. When the blossoms secrete, the bees soon get back to the supers.

But a still more astonishing experiment and result is obtained in a wintering experiment. "In September last year sixteen colonies were prepared for winter as follows: The hives were eight-frame Langstroths, contracted to seven frames and fed until the combs were full, except where a few square inches of comb were occupied with brood. Inverted queen-excluders were placed over the combs, and on top of them well-propolized quilts. Four hives were then placed together, side by side, as closely as possible, first putting a double thickness of cotton batting between the hives, so that no air could get between them. The covers of this row of hives were removed and a layer of cotton batting placed on top of them, and then upon that a sheet of mineral wool, and on top of this another row of hives treated exactly like the first. Then a third row and a fourth. But there was neither cotton batting nor mineral wool on top of the last row. Twelve inches of shavings was placed on top of the pile of hives, and on all sides except in front, which was left exposed to the weather. The shavings were kept in place and protected from the weather by inch sheeting, and on the roof by tar felt besides. The entrances of all but the bottom row were contracted to two inches in order that the bottom-board, which was the cover of the hive beneath it, might not become cold. The contracted entrances were cleared of dead bees by means of a bent wire twice during the winter.

"The object aimed at was to pack the hives in the cheapest manner possible, to utilize the animal heat from the hives, and to make the bees fly during the winter.

"The hives were protected by a high woods on the northwest, and the hive entrances faced the southeast. The winter was abnormally mild, and the sun, warming up the face of the hives which had no protection, caused the bees to fly a great deal—perhaps too much. The hives were opened and examined the first of May. There did not seem to be any difference between the interior and exterior ones, so far as the condition of the stores and combs went, there being no mold on them. All the hives showed evidences of winter laying, and two of the interior colonies were dead from starvation from this cause. This, however, occurred to a greater or less extent in those wintered in the ordinary chaff hives, and was attributed to the very mild winter."

It would be interesting to know how the bees were placed in their position without returning to the old stand upon their first flight, and how the same difficulty was overcome when unpacking. When the first examination of a colony is made May 1, it would be highly interesting to know what are the symptoms of winter laying. There is one thing, however, about this experiment—it would appear from it that an eight-frame Langstroth hive can no longer be depended

on to hold enough honey for winter stores, for, after taking one comb out and feeding the bees "until the combs were full, except where a few square inches of comb were occupied with brood," two starved. Beat this if you dare in the United States.

The item under the head of "What the Government of Belgium is doing for Apiculture," page 240, may well arrest our attention—so small a country, 258 bee societies, and subsidies from the state, to the extent of 21,780 francs—over $5000 per annum.

OVERSTOCKING.

At the risk of returning to a somewhat threadbare subject, let me say that I believe that the danger from overstocking is much magnified. Bee-keeping being my sole means of livelihood, in order not to have my eggs all in one basket I scatter the bees. Localities not very far apart may vary as to nectar, owing to seasons, etc. I have had two apiaries five miles apart vary 50 per cent in the honey crop.

MORE THAN ONE QUEEN IN A HIVE.

When I was with D. A. Jones, Beeton, in 1880, he repeatedly tried having two or more queens in a hive separated with queen-excluding metal. For a time these queens would go on in their compartments and then be missing. I am afraid this would be the case with several queens in a hive. I also doubt if several queens in a hive will prevent swarming; but then, I may not know any thing about it. How is it that, if two swarms unite, having laying queens, the bees will accept either queen; but when both are left with the united swarm one queen will be destroyed?

SMALL ENTRANCES.

Prof. Cook favors small entrances because the bees have these in a bee-tree. To be logical he must also favor irregularly built crooked combs, as these are also found in a bee-tree. Small entrances and limited storage room tend to much swarming, and in this way bees perpetuate themselves in nature. But we are after surplus honey. If we follow nature as suggested in the small entrance, we should not keep bees at all in this country, as our bee is not even a native of it.

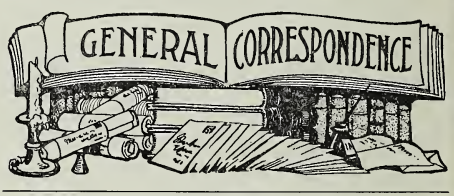
THE SEASON.

Soft maple in the woods in the country has at this date, April 30, not yet come into bloom —fully three weeks later than is generally the case, and the latest I can remember its coming in. Unless stimulative feeding has been practiced, there is a very limited amount of brood in the hive.

TWO OF MORE LAYING QUEENS IN ONE HIVE.

I have now the permission of F. A. Lockhart, Lake George, N. Y., with whom I have had a good deal of business dealing, to tell publicly that he has been practicing having several laying queens in one hive for five years. He told me of this privately some time ago. He writes, "You are the only party I ever told any thing about managing bees by using two or more queens in a hive. This new system for building up strong colonies in the spring, and for rearing large prolific queens and mating the same from the parent hive, is a dandy."

I have profited immensely by visits among New York State bee-keepers, and I am grateful to them for many hints, and have respected their confidences.



PROFITS IN BEE-KEEPING.

Modern Methods Reduce the Cost of Production.

BY E. W. ALEXANDER.

In your footnote following my article in the Feb. 15th issue of GLEANINGS on "Bee-keeping as a Business," you think some of your subscribers may take issue with my statement as to the net profit in the work—namely, $5.00 per colony, spring count, clear of all expenses. Well, as to that I am sure a very large per cent will question that statement, and I will admit that perhaps not ten per cent of the honey-producers of the United States are making that amount per colony. I will also admit that, during the thirty years of my comb-honey experience, I did not make $2.00 per colony clear of expenses from the many colonies I had then. Neither did I make $3.00 per colony clear of expenses in producing extracted honey during the first several years I was engaged in that business. But during the last few years there have been great changes made in producing honey. First, our bees are now bred from much better honey-gathering strains than formerly.

Then some have studied out and perfected certain methods in caring for their weak colonies in early spring, so we now have no more losses in that way, and we have certain ways of making increase whereby not a bit of brood is lost—not even an egg. There has also been great improvement in extracting and curing the honey, which has much to do with selling it readily at a good price; and a few of us have dearly learned the folly of all that out-apiary expense, such as keeping several horses, paying dear rent for a place to set the bees, and losing a large part of the working force from each out-yard in absconding swarms.

It is only a few years since it cost me 4 cents per lb., cash out, to produce extracted

honey. How different now, with these improved methods put into practice!

According to our books, during the past three seasons we have produced 181,237 lbs. of honey. Now, when all expenses were deducted, such as hired help, including board, barrels for honey, sugar fed in the spring to stimulate early breeding, interest, and taxes on $5000 capital invested, our own labor, including delivering on the cars at this station, we find the actual cost to have been a fraction less than one cent per pound.

Now, when honey has been and can be produced at one cent per pound, mostly with hired help, it is not far out of the way to state that bees will pay $5.00 per colony, clear of all expenses. But in order to do so you must learn how to reduce expenses to their lowest possible minimum, and produce honey in the largest possible quantities that a certain number of colonies can be made to do.

The fact that thousands of bee-keepers are not making $2.00 per colony is no disparagement to the business. The same can be said of hundreds of farmers in this section, who are not making net $100 per year from their farms. But there is no reason why each could not be made to pay well if better methods were adopted.

No, my friends, I don't care to modify my statement in the least, that about $5.00 per colony, spring count, clear of all expenses, is a moderate estimate of the profits from the business. There are those that are doing even better than that, as well as hundreds who are making but little.

A few have seen fit to criticise our methods in securing these results, and I do hope that they will give the readers of GLEANINGS much better methods than any I have been able to give, so we can all produce honey still cheaper. If so, I shall be one of the first to take of my hat and thank them all for their very valuable information.

Delanson, N. Y.

[There is one class of writers who can write well, but who, somehow, are not able to practice what they preach. Surely, Mr. Alexander is not one of that kind—nay, rather, he is one who "does things." We venture to say that there are not many in our ranks who can make such a showing.

Speaking about dispensing with outyards leads us to say this is possible in a locality like Mr. Alexander's; but we doubt if bee-keeping can be carried on on a large scale in most localities — at least not profitably — without scattering the bees in several out-yards. Alexander's apiary is on a hill overlooking hundreds of acres of heavy bee-forage which his bees can plainly see for miles, for there is nothing to obstruct the flight or vision; hence they will fly further than ordinarily.—ED.]

A SEASON'S WORK WITH SECTIONAL HIVES.

Swarm Control and Comb-honey Production; Harmony with Nature's Plan.

BY J. E. HAND.

In a former article we mentioned certain hive manipulations as being necessary in order to prevent the brood-chamber from becoming crowded with honey and brood, which are the prime causes that bring about swarming. This brings us down to the sectional hive. As that hive is the only one that can solve the problem of the rational hiving of swarms so that work in the sections is not in the least interfered with by the issuing of a swarm of bees, but goes right on with even more vigor than before, even so we must look to the sectional hive as the only means of swarm control in the production of comb honey where the brood and bees are to be kept together, with no desire to swarm, right through the honey-flow, be it long or short, fast or slow. To the fact that the principles embodied in the construction of the sectional hive are the result of a careful study of the natural instincts of the bee is due the reason why it is destined to solve the problems of perfect swarm control and successful comb-honey production that have for so many years baffled the skill of the users of the full-depth fixed-brood-chamber hive.

FIG. 1.—J. E. HAND'S SECTIONAL HIVE; BROOD SECTIONS AND SUPERS ALL ALIKE AND INTERCHANGEABLE.

Although it is claimed that the large full-depth hives will prevent swarming, yet bees in such hives continue to swarm the same as of old. This theory is as destitute of any proof for its support to-day as it was twenty years ago; and yet it has been harped on for so long that it has come to be accepted as a matter of fact, while in reality nothing in

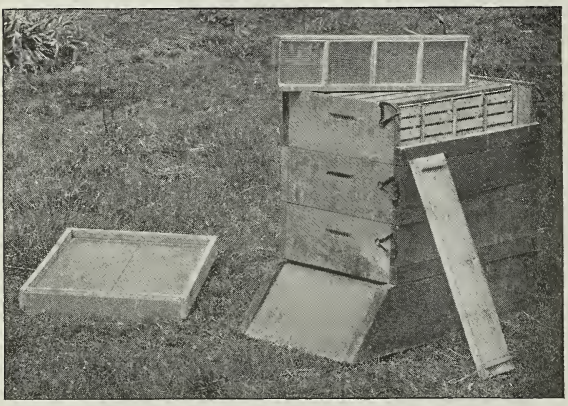


FIG. 2.—SIDE OF UPPER SECTION DETACHED TO SHOW CONSTRUCTION.

the world could be further from the truth. If these articles are the means of wiping out this venerable fallacy, and establishing in its place a better precedent, we shall feel that our labors have not been in vain. The principles of the sectional hive are in perfect harmony with the nature of the bee; and by the manipulations for which it is especially adapted it enables the apiarist to turn the instincts of the bees to his own account in solving the problems of successful apiculture. This will be clearly demonstrated by actual work in the apiary further along in these articles.

PROPER CONSTRUCTION OF SECTIONAL HIVES.

Improperly constructed hives, and failing to separate the system of manipulation by hives from the old method of handling brood-frames singly, have led many to condemn these hives. If I were to use some of the hives that are called sectional, with thumb-screws and wedges, etc., and didn't know any better than to handle these little brood-frames, I'd be tempted to brand the whole system as a delusion and a snare. The illustration will show a properly constructed sectional hive. The brood-sections and section supers are alike and interchangeable. The brood-frames will fit one as well as the other, as will also the wide frames for sections. We use the $4\frac{1}{4}$ plain section and fence separator.

The brood sections contain eight closed-end standing frames, and the section supers hold six wide frames and 24 sections. All frames stand on metal supports nailed to the bottom of the ends of hives.

There is no bee-space between the ends of frames and hives, and frames should dro into hives easily without binding in the lea

To facilitate getting out frames these hives and supers are provided with a movable side except $1\frac{1}{4}$ inches at the bottom This piece holds the hive perfectly rigid when the movable piece is removed.

This movable side is clamped on to the side of the hive by a pair of Van Deusen clamps. Where it is clamped on a strip across at each end on the inside engages the uprights to frames, compressing them up against a pair of super-springs which ar made fast to the other side of hive.

The tension on the spri allows for swelling and shrin ing, and the frames are alwa tightly compressed together. A other essential feature that we have added to this hive is th narrow top and bottom bars to the brood-frames. To facilitate the clearing of the brood-chamber of bees, and also to enable the operator to have a clear view of the surface of the brood-combs from the bottom of the hives, the bottom-bars are $\frac{1}{2}\times\frac{1}{4}$ inch, and the top-bars are $\frac{3}{8}\times\frac{13}{16}$.

A FEW DONT'S.

Don't think that any old thing is good enough for a sectional hive, and then condemn the whole system because your hives were not properly constructed.

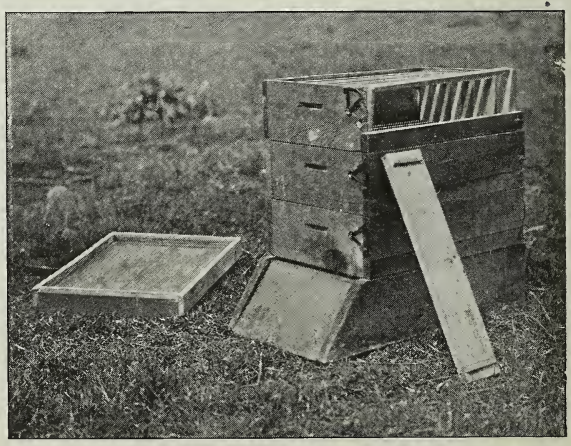


FIG. 3.—UPPER SECTION FILLED WITH BROOD-FRAMES.

It should be understood that the sides of the sections are made removable—not to permit of more easy handling of combs, for Mr. Hand never manipulates combs singly—but to facilitate the work of putting in and taking out the frames or sections and fences.

Don't handle brood-frames singly. It is a waste of time that should be put to a better use.

Don't use brood-frames with inch-wide top and bottom bars in sectional hives.

Don't think that these brood-frames would be better if they were a little deeper. They are $4\frac{1}{8}\times17\frac{5}{8}$, and the limit of shallow frames has not yet been reached.

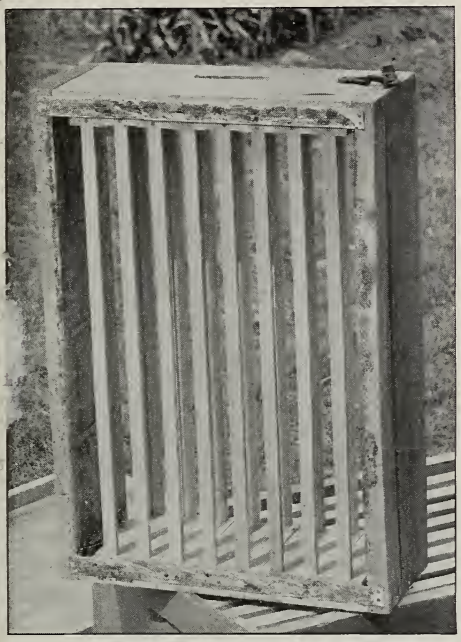


FIG. 4.—LOOKING THROUGH A SECTION FROM THE BOTTOM, SHOWING THE VERY NARROW BOTTOM-BARS AND TOP-BARS.

Don't think that a ten-frame hive would be better for swarm control than an eight-frame one, as it is far more desirable to have the additional room in the form of another eight-frame brood-section, thus giving a brood-chamber of the capacity of twelve L. frames, and fifteen inches deep. While two ten-frame brood-sections would not be big enough, three would be too big for one queen, and, besides, the ten-frame super is too wide to get the best work done in the outside sections.

Don't think that you can improve this hive. We have been working on that line for twenty years.

LOCATION OF OUR APIARY.

To give the reader something of an idea of the apiary in which our season's work is to be conducted we will give a short description of it.

It is situated in an apple-orchard of large branching trees that afford an excellent shade for a part of the hives as well as for the apiarist. The ground is high, and gently sloping to the north and west. The hives are in rows running north and south, and are in groups of four—two facing east and two facing west, with a three-foot alley between backs of hives, and a ten-foot alley between fronts, and six feet between groups. It will be seen that we have four hives to manipulate, without moving more than three feet either way. Another advantage in having hives in pairs close together is that, if one is removed, the returning bees will quickly enter the other hives instead of buzzing about the old stand for several days.

SPRING MANAGEMENT OF BEES.

I am aware that, on this subject as on many others, I am compelled to take grounds directly opposite those taken by some of our best authorities. After much experimenting along the lines of spring feeding to stimulate early brood-rearing, if I were asked when is the best time to feed bees to stimulate early brood-rearing I would unhesitatingly say during September. In very many locations there is not enough honey being gathered during this month to keep up brood-rearing; hence the queen will often stop laying, and, no matter how many bees your hives may have contained during June and July, if this condition of things is allowed to continue long you will have a colony of mostly old bees to go into winter quarters, which means a weak colony to build up in the spring. No amount of spring feeding can ever place such a colony at the beginning of clover bloom in anywhere nearly as good condition as it would have been if the queen had been kept laying during September, thus giving us a strong force of young bees to go into winter quarters instead of a lot of old ones that would die off before young ones could be raised to take their places in early spring.

This is improperly called "spring dwindling." Spring feeding excites the bees, after enticing them to leave the hive during unchangeable weather, only to be caught by a sudden cold wave and chilled. Spring feeding is indeed a two-edged sword, cutting both ways, and therefore is a dangerous weapon in the hands of the unskilled.

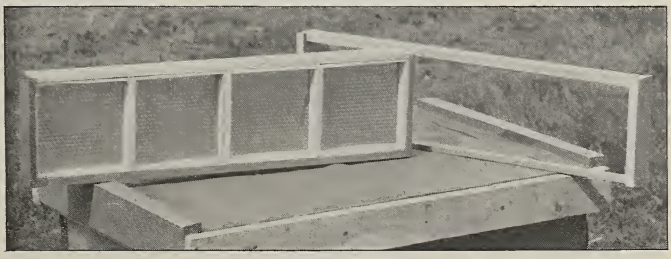


FIG. 5.—A WIDE FRAME FOR THE SECTIONS AND A REGULAR BROOD-FRAME.

All the stimulant that is needed at this time is a vigorous queen, plenty of bees that

were hatched out during September and October, and plenty of honey to last until fruit-bloom. As this is the exact condition of our bees at this time we will not loosen a single cover or remove the winter packing until it is time to clip our queens. Spring tinkering of bees more often results in harm to the colony than otherwise; however, we would not hesitate to feed a colony of bees at any time if they were short of stores.

If we wish to note the condition of a colony in early spring we always tip the hive up on end and look up into the combs. This tells us all that we wish to know at this time.

Breaking the sealing of the cover in early spring allows a great deal of heat to escape from the cluster at a time when it is needed to keep the brood warm.

Birmingham, Ohio.

FIG. 6.—MR. HAND'S APIARY OF SECTIONAL HIVES IN AN APPLE-ORCHARD; THIS PLAN ALLOWS A THREE-FOOT ALLEY BETWEEN THE BACKS OF THE HIVES.

BEES OF NORTHERN AFRICA.

Why there are Two Yellow Races So Widely Separated; International Exchange of Ideas.

BY C. P. DADANT.

I am in receipt of a letter from the treasurer of the Association of Algerian Bee-keepers, Mr. Bernard, of Kouba, Algeria, who calls my attention to a short article in GLEANINGS for February 15, p. 240, concerning the bees of Northern Africa. In this article mention is made of the fact that the bees of Egypt and of Senegal are yellow, while those of Tunisia, Tripoli, Algeria, and Morocco are black. The suggestion is made that our common bees of Europe must be descended from those of Northern Africa; and Mr. Morrison, the author of the article, says that the fact that these two races of yellow bees of Africa are separated by three thousand miles of black bees is a conundrum worth studying.

Mr. Bernard suggests that the yellow bees of Egypt could easily spread westward south of the desert until they reached the western shores of Africa. But the desert was an insuperable barrier to their spreading in a northerly direction to the northern limits of Africa. On the other hand, the bees of Algeria could reach Europe through the Strait of Gibraltar.

The same may be said concerning the bees of Italy. A glance at a physical map of Europe will show that Italy is separated from the rest of Europe by the highest and most uninterrupted chain of mountains on the continent, almost uniformly snow-capped. So in Africa, the heat and drouth of the desert, and, in Europe, the cold and snows, have acted as limits to confine the races which have slowly drifted apart, in appearance as well as in other qualities.

I desire to take advantage of this opportunity to congratulate the bee-keepers generally upon the increase of international exchanges in bee literature. It is only a few years since the apiarists of one country were almost totally ignorant of what was done in other countries in the same line. Mr. Samuel Wagner and Mr. Langstroth were the

first to bring to our notice the European discoveries. Then, for years afterward, only a dozen men or so, such as Grimm, Muth, Benton, etc., read regularly the foreign bee publications. Now not only our bee journals give us daily mention of European questions, but our own papers are noticed in Europe, and not a month passes without some quotations being made from nearly every bee publication of America. The increase in international information is becoming very common, and will certainly prove of benefit to all.

Hamilton, Ill., April 12.

COMB HONEY.

How to Keep it from Becoming Watersoaked; Carbon Bisulphide to Kill Moths.

BY DR. C. C. MILLER.

A correspondent desires me to talk in GLEANINGS about keeping comb honey, and writes:

> I can keep mice out by a mouse-tight room. I can keep ants out by putting the honey on tables the legs of which stand in tin cans with water in them. But here is the rub: How can I keep it from "sweating" and keep it from moth? I put it upstairs on the south side of my house, out of the supers, on tables, and it would drip some even then. If I leave it in supers it would cure rather less; but I could treat it with bisulphide of carbon, which would be rather difficult if out of section-holders. And still another difficulty: This is over living and sleeping rooms. I should hate to put bisulphide of carbon upstairs and go to sleep under it, for I might go out of the bee business rather suddenly. Of course, I might get rid of some of the trouble by building a honey-house; but there are hundreds, like myself, who haven't bees enough to warrant building one.
>
> Information along this line would be very instructive to me and lots of others.

Years ago I had no little trouble with worms (begging Prof. Cook's pardon for using the short name for the larvæ of the bee-moth) in sections. No matter how free from them the sections appeared to be when taken from the hives, in the course of a week or two the work of the little miscreants would appear. It seems difficult to understand how a moth could get through the crowd of bees and be allowed to deposit her eggs in the sections while on the hive, but somehow they did it; for if a lot of sections were sealed hermetically immediately upon their being taken from the hives the worms would appear in due time all the same, showing clearly that the eggs were there while the sections were still occupied by the bees.

Of course, nothing could be directly done to prevent the laying of the eggs, so I resorted to after-treatment. The first appearance of any thing wrong would be little heaps of fine white powder, in each of which was a worm so small as almost to escape observation. These beginnings were generally on the comb built next to the wood. If a cell contained pollen, that was a favorite starting-place; also the body of a dead bee. Don't ask me how a dead bee could be left in the hive, or how a moth could lay an egg on it, either before or after its death. I don't know. I only know that, in the rare cases in which a dead bee was found on the bottom-bar of a section, a worm was sure to appear there in due time.

I treated them to the fumes of sulphur. A very little of the fumes will kill these very young larvæ, and ten times as much will scarcely affect one three-fourths of an inch long. Sulphur does not affect the eggs. Freezing kills them; but, of course, I could not wait for freezing weather. About two weeks after the honey was taken off, the first fumigation occurred, with perhaps ¼ pound of sulphur for each 100 cubic feet of space. Too heavy sulphuring greens the sections. That left some eggs which would hatch in the next two weeks, when they were fumed again. The two treatments were enough. There were plenty of cracks in the room where moths might have entered, but they never did that I knew.

Instead of sulphur I suppose I should now prefer bisulphide of carbon. It hardly seems that it ought to be dangerous to sleep in a room beneath; for if you operated in the morning you could air thoroughly before night, and with your sleeping-room windows wide open you ought to be pretty safe. At any rate, the smell ought to warn you of any danger. An important advantage of the bisulphide is that it kills both eggs and larvæ, requiring only one treatment.

I said I had trouble years ago. I never pay any attention to worms nowadays, so seldom does any trouble occur that it isn't worth minding. I don't know what should make the difference unless it be that formerly I had black bees, and now there is more or less Italian blood in all of them. Italian blood is perhaps the best vermifuge.

I don't know of any drug that's good for watery honey. Honey under certain conditions seems to have a liking for moisture; and the greener the honey, the greater seems the liking. Likewise the longer honey is on the hive the less likely it is to become watery. I have seen sections in which the air-space under the cappings was entirely filled by the thinned honey, making the sections look watery and dark, while other sections right beside them showed no appearance of being affected. The first has been filled in a flush of honey, and taken from the hive just as soon as sealed, while the others were left on till the bees began to darken the cappings of some of the sections. So one thing to look out for is not to be in too much of a rush to take off sections, especially when bees are storing very rapidly.

A damp cellar is one of the worst places for honey. Another bad place is a room opening off from a kitchen, the room being colder than the kitchen. The steamy air from the kitchen gives out its moisture in the cooler room, and the honey grabs for it. Yet the honey will be all right in the kitchen itself, in spite of the steam, for the greater heat keeps drying it out.

Plainly, then, we want the honey in a place where things will dry; and as heat is a great drier, the hotter the place the better, so long as it does not melt the comb. An attic close up to the roof, where, under the summer sun, it gets "hot as election," is a fine place. I have known sections which had endured the summer's roasting in such a place, to go through the freezing of the following winter without being affected, when most sections would have granulated and cracked with the freezing.

Put honey in a room warmer than the surrounding air, and with at least a little chance for ventilation; and instead of fearing that it will become watery you may count on its improving. That's about the whole story. I don't understand why your south upstairs is not all right, and can only guess that, for some reason, it is not warm enough. The remedy is to raise the temperature — if no other way, by an oil-stove.

If you have sections over the faces of which honey has been dripping, put them over a strong colony for an hour or two, and the bees will make a perfect job of cleaning the outside. Then put them in a warm place, and you may count on the honey improving if it is thin; but if the air-spaces under the capping have been filled, you can never make it right again. Prevention is better than cure.

Marengo, Ill.

[We have had quite a little experience with carbon bisulphide for fumigating honey, and can indorse all that Dr. Miller says. There would be no danger in sleeping below the honey-room if one were reasonably careful to close the cracks under the door, etc.

For the most effective work, the main point is to have plenty of bisulphide for the size of the room. It is often an advantage to use a large tight box for the honey, with the liquid in a shallow dish on top, so that the amount of air will be smaller and the gas correspondingly stronger.—ED.]

CANDY FOR FEEDING.

The Somerford Method of Making Increase.

BY EDWARD FLYNN.

I lost several colonies wintered outdoors in single-walled hives. I fed syrup in the fall, and candy this spring. When I first started making candy two years ago I found it very difficult to make it just right, and am not sure that I have succeeded yet. After putting on a super, I place a slab of candy on top of the frames (they are flush with the top of the hive), with a couple of ½-inch-square sticks supporting it. In a day or two the candy sinks down, and cements the sticks and frames in a concrete-like solid mass—very hard. Is this right? It is very hard to get the candy off the frames again. I may mention that I nail a cleat half way up on the inside of the super, cut a half-inch board to fit inside on those cleats, and put packing on top. I also tack a piece of enamel cloth on the outside of the hive, where it meets the super to retain the heat, so I don't think they got chilled. Nearly all I fed with candy died; those I did not feed are all right.

I have a lot of hives with good clean comb on hand, and wish to increase this summer to make up for winter losses.

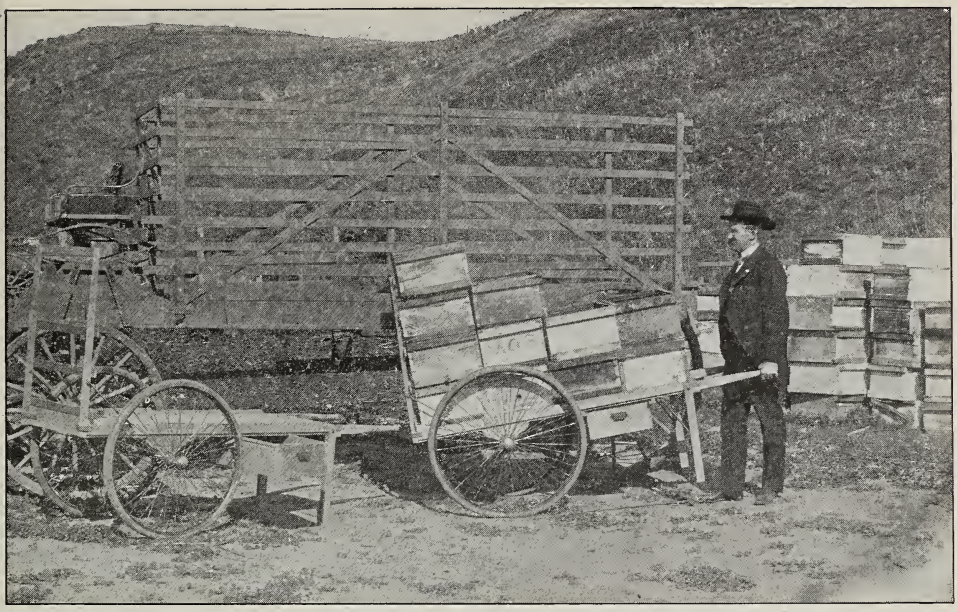
I have been reading up the Somerford method of increase in the A B C, and intend to try it; but there are some parts of it I want explained. Mr. Somerford says: "To begin with, remove the queen or cage her." Now, right here I want to know where I shall remove her to. I want to put her back again in the old hive after I divide. If I cage her what sort of a cage shall I put her in—a Benton introducing-cage? How much candy will she and her attendants consume during the ten days she will be away from the hive? or will she require any attendants at all? Lastly, where should the cage be kept—in the old hive or where? I shall divide only one hive. I won't risk any more till I see if I make a success of it. Mr. Somerford says, "Put in one good frame of honey, using it as a division-board. I have no frames of honey available, as I have only six hives left altogether, and three of these are not Langstroth, the size of the one I am going to divide (that is the worst of having different-sized hives). Would an ordinary division-board and a quantity of syrup sufficient to last four or five days, placed in the bottom of the hive, do as well as the frame of honey?

Epworth, B. C., Canada, March 30.

[It takes a little experience to make the candy and have it just right. As explained in a previous issue, the sugar and water should be cooked to a "hard crack;" that is to say, when the boiling has been going on long enough so the finger, when first dipped in the water, and then immediately into the hot syrup, and back again into the water, will form a film that will crack when the finger is bent, then the cooking has progressed long enough. But be careful in making this syrup to see that it does not burn. It should then be poured into shallow wooden butter-dishes; and if the candy has been made right it will not run down between the frames. But, to prevent the possibility of it, turn the butter-dish of candy right side up. For experiments on candy-feeding you are referred to pages 95 and 82 of our Jan. 15th issue.

When Mr. Somerford speaks about caging the queen he means putting her in any kind of queen-cage, placing the cage on top of the cluster of bees, or between the frames if it does not bulge them too far apart. The ordinary cage will hold candy sufficient for a week or ten days. When he speaks about removing the queen he means putting her into another hive by introducing.

A division-board and a frame of candy or a pan of syrup would answer in the place of a frame of honey.—ED.]



MERCER'S PNEUMATIC-TIRED CART ARRANGED FOR CARRYING HIVES.

EXTRACTING-COMBS.

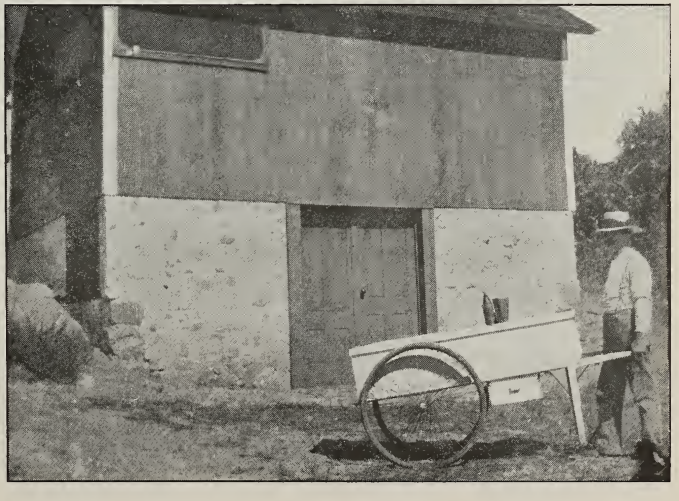
Pneumatic-tired Carts for Carrying them to the Honey-house.

BY L. E. MERCER.

On page 1574 of the Christmas issue of GLEANINGS for 1906 are two pictures of Mr. Alexander's extracting-house, and the man with that heavy box of honey. It makes my back ache to look at that picture. I don't think I could keep a man on my bee-ranch more than one day if he had to pack the honey that way. Well do I remember one summer about 23 years ago, when I carried about 20 tons of honey in the tin bucket such as used to be advertised in GLEANINGS for that purpose. It makes me tired to think about it now. But the next year we used a sort of cart and box that held ten combs, and shoved them into the house on a set of rollers, and out on another set; but we soon discarded that for something better, and now we use the rubber-tired carts that you see in the photos I am sending. When the larger picture was taken I was loading the wagon with supers for an out-apiary. The rack on the back of the cart is removed when we go to extracting, and we place on the cart a box with a tin bottom. This holds 40 L. combs, as seen in the smaller view. We have 12 such carts, two for each apiary. The box is not taken off the cart. One is unloaded while the other is loaded, and we always go out with a full set of empty combs to replace the full ones that are taken off the hives.

Ventura, Cal.

[Mr. Mercer is one of the most extensive



A PNEUMATIC-TIRED CART FITTED WITH A TIN-LINED BOX FOR CARRYING EXTRACTING-COMBS.

bee-keepers on the Pacific coast; but the cart he shows here, while just the thing for him, would not answer in Alexander's apiary, which is located on a stony rough side hill. Localities and conditions make what would be practicable in one locality an utter failure in another. The cart here shown would be a great labor-saver in most localities.—ED.]

A PROPOLIZED SKELETON OF A SQUIRREL FOUND IN A BEE-TREE.

BY C. A. PHILLIPS.

Last July the writer was hunting squirrels, and after chasing one up a tree he was surprised to see it enter a hole leading to a hollow part inhabited by bees. In October he cut the tree to get the honey, and found the carcass of the squirrel, devoid of flesh, and completely propolized. The front foot was directly over the nose as if the squirrel were scratching the bees off its nose at the time of death.

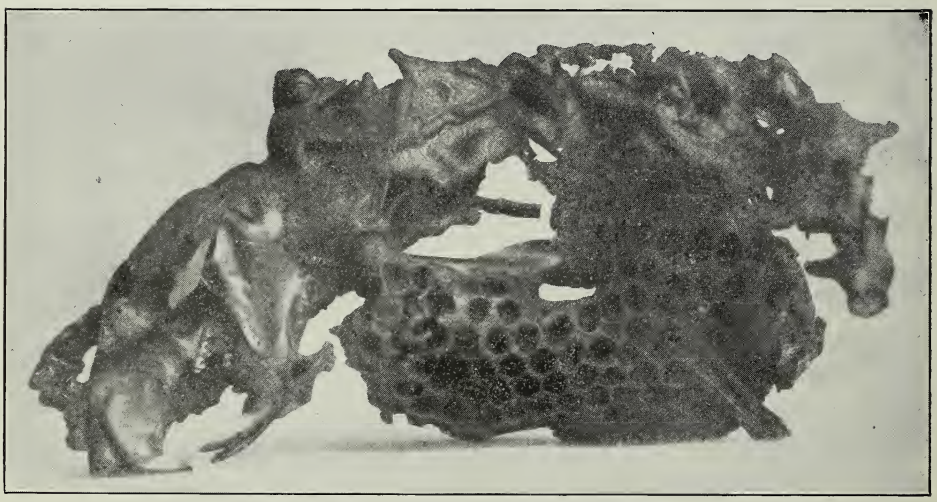
The engraving shows this, and also the pecan shell at the base of the neck. The lower part shows some comb containing a few sealed cells of honey. We think this is really a freak. It shows how bees can embalm an object of this kind.

Rushville, Ill., Oct. 20.

[This is indeed a very interesting exhibit. We only wish we knew the life-history of the squirrel so neatly embalmed; but, not knowing the circumstances, such history can be pretty accurately surmised.

It is well known that a squirrel, unless seeking to get away from a hunter, would not take the chance of rushing into the flight-hole of a colony of bees in a tree. This squirrel had probably been shot at, previously, and on this occasion took a long chance with the bees as against the hunter. It is very plain that it might better have submitted to the "tender mercies" of the man behind the gun.

It would be interesting to know exactly what took place after this squirrel was stung to death. Did its body decompose or shrivel up? Or if the former, did the bees carry away the decayed tissue? Of course the hard bony portions of the animal they could not remove. To remove the odor of the carcass they did the only thing they could do—cover it with wax and bee-glue—that is, embalm it.—ED.]



A SQUIRREL EMBALMED WITH PROPOLIS BY BEES IN A BEE-TREE.

MORE THAN ONE LAYING QUEEN IN A HIVE.

When the Condition is Possible; Some Possibilities.

BY A. K. FERRIS.

On page 473, April 1, I noticed something which greatly interested me because it was along a line on which I have carried on a large number of experiments; and the reason, perhaps, above all others, was the fact that it came from the pen of E. W. Alexander, the man whom I consider as entitled to the first place among bee-keepers. In his article I noticed something which will be largely misunderstood; and for his sake, more than any other, I do not wish bee-keepers to get a wrong impression of one who is trying to benefit the apicultural fraternity.

Mr. Alexander, with his almost continuous honey-flow, can place as many queens in one hive as he chooses, and this I found I could do also, so long as there is some sort of honey-flow or a prospect of one; but when you get into a locality where the flow drops from

a heavy one to nothing, all in one day, as I did, he will find that all except one and in most cases all the queens will be killed.

To illustrate: In running on the two-queen system, and in using excluders to keep the queens below, I found very frequently, when brood was raised above the excluder, that they would build queen-cells during the flow. Oftentimes these escaped my notice, and in due time I would have laying queens both above and below the excluder.

My experience perfectly coincides with Mr. Alexander's in the fact that such colonies, with more than one laying queen, never make any attempt at swarming; in fact, they act as though they did not know how to work fast enough. They roll in the honey as long as there is a flow, with a vim seen only in such colonies; but when the honey-flow drops off about July 25 to 28 we generally find all queens dead in such hives in three days. In fact, at such a time any thing from a two-frame nucleus to a two-frame hive or more is liable to have its queen dead at the entrance, within three days from the close of the flow. Nor is it poor ones that receive such treatment, for I find it to be my very best and most prolific queens that go. It is almost impossible to get such a colony to receive a queen of any description for about ten days, and in some cases I have to wait even longer. This may seem like a very peculiar condition, but such is the case over a large portion of Southern Wisconsin.

Where the white-clover flow ceases on account of excessive heat, and there is no other honey-producing plant, such a condition will exist. Where the flow is continuous many things can be accomplished that can not be where there is not.

I am glad Mr. Alexander has given his experience along this line, and there are many places where the bee-keeper of careful habits can keep a number of laying queens in one hive, and it does not matter much whether they are separated or not; but what I am now and have been working on is a system where we can multiply laying queens in each hive at the right time without the fuss and bother usually entailed in getting them, and still not have them all destroyed by a cessation of the flow. I am satisfied that I have this; and after another season's trial I shall be prepared to give it to the public. I do not believe in being too hasty in putting out new things, for we get enough criticism from those "bungling" bee-keepers any way, without needlessly exposing ourselves to the fire of the rank and file, who know nothing of the real facts, and simply reason it out from things they supposed were facts, which we find, upon careful experiment, to be entirely wrong.

Hines, Wis.

MORE THAN ONE LAYING QUEEN IN A HIVE.

About two months after my bees deserted their hives and doubled up at the time referred to in my former article, I once found two fertile queens working together. It could hardly have been a case of superseding, as my bees were weak, and I think there were no drones flying then. The next spring I sent for an Italian queen, probably the first brought to that county, and took her in her cage to a queenless colony that I had prepared for her. I was then green and awkward at handling queens, and she flew away, and so I lost her. Some two weeks after, while examining a hive about ten steps from the one to which I intended to introduce the queen, to my surprise and delight I found my yellow-banded queen, and I think it was on the next comb that I also found the old black queen.

During that summer I had a nucleus standing near a strong colony of hybrids. At about the time the young Italian queen should take her wedding flight she disappeared. Some time after I found two Italian queens in that strong colony. The one being extra large and well marked, like the lost virgin, I concluded that this was she.

I should be very much pleased to have Mr. Alexander tell us how to introduce several queens to a colony, as I think that knowledge would be a benefit to me.

Lander, Wy. I. W. Beckwith.

TWO LAYING QUEENS IN ONE COLONY.

Last spring I had two breeding queens Nos. 1 and 2. No. 1 was very weak in bees; No. 2 medium; both were very good layers, and nice big prolific queens. I used No. 1 the most for breeding young ones, hence did not get that colony strong; but No. 2 was full of bees early in the summer before I expected. Every now and then I had it open to take eggs out. Finally I noticed it had started queen-cells. I did not know the cause, as honey was coming in too slowly to expect it to swarm. Later I found virgins and the old laying queen in the same hive, so I took out the virgins. After a while I again found nice cells, so I commenced to cut out cells to give to nuclei—how many, I can't say. Then during haying and grain-harvesting time I was so busy that I could open no hives. No. 2, I think, was not opened till the latter part of September, then, to my surprise, I found nothing like a queen—no eggs nor brood, and the colony weak. Now, No. 1 I had opened very often in order to take out eggs, etc., until about the last part of June. Remember, this was kept weak by taking eggs; but still I also cut out two ripe cells, if I mistake not, about the 26th of June, and then, as nearly as I can say, I did not have it open for about two months. Then when I looked through that colony I found two laying queens. Both looked nice and big. I let both go until Nov. 19, then I took the young one out; but before I caught her I had the hive open perhaps 20 minutes, just to see what the queens would do before my eyes; and let me tell you, friends, that said queens were so proud of each other (so it seemed) that they crawled on top of each other, over and over again. It seemed they were kissing each other. I only wished the hive were packed

full of bees or that it were spring instead of Nov. 19. D. E. BEST.

Best's, Pa.

HAS WORKED THE PLURALITY-QUEEN SYSTEM FOR YEARS.

I notice the article in May 1st GLEANINGS about a plurality of queens in a hive, etc. This system is not new to me. I have been using this wonderful system for the past five years with success and satisfaction for building up colonies in the spring rapidly and rearing and mating the very finest queens. The system is a model one. You have seen for years that we have been advertising queens for early orders.

Now, it is a very easy matter to winter a lot of small colonies, but quite another thing to care for them after taking them from the cellar on account of swarming out, spring dwindling, robbers, etc. With the new system these troubles do not bother us; with a queen-excluding zinc over a strong colony and the small colonies in a hive above with division-boards between each little colony, all will be well; and when we need a queen for a customer, all we do is to remove one of the queens, withdraw the division-board, and shove the frames up next to the other small colony, and all goes well, after removing all the queens but one. That is left to build up to a strong colony, etc. Very likely I could tell a few things about this system that would surprise some of our old "vets."

Lake George, N. Y. F. A. LOCKHART.

[We are glad to know you have made a success of this. We are all eager for you (or Mr. Holtermann, see page 764). to tell us more about both schemes. If you make them work, and no doubt you do, you surely can enlighten some of the "old vets." —ED.]

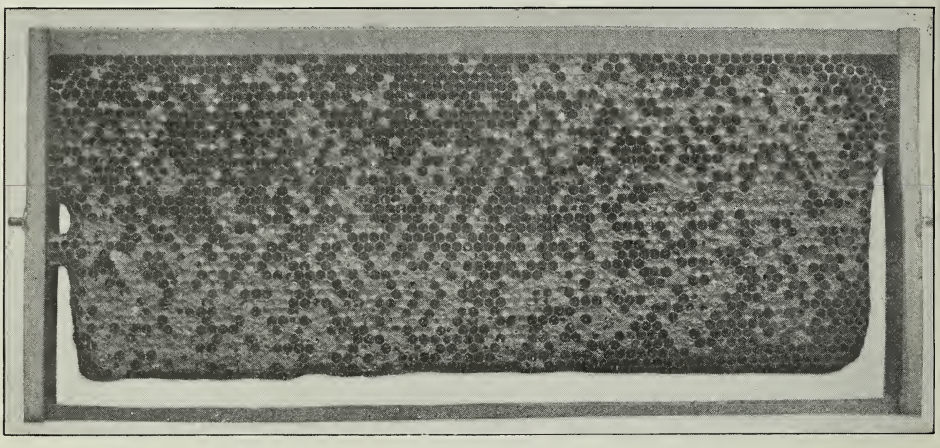
AMERICAN FOUL BROOD.

A Characteristic Sample of the Disease.

BY L. SCHAFER.

When I was preparing my bees for winter I noticed something wrong with the brood. The photograph shows the condition of the combs. I think it is foul brood. The larvæ are brown in color, of a ropy consistency, and all run together. The smell is like that of a glue-pot. I fixed them up the best I could, and if I have any left in the spring I shall have to treat them. Notice the outline of a cross or anchor cross in the center. I should like to know what and where the disease comes from. All my old stock has it. There are lots of bee-keepers around here, but I never heard of foul brood being present.

Marion, S. D.



AMERICAN FOUL BROOD IN AN ADVANCED STAGE.

This sample shows the irregular appearance of the brood, the perforated cappings, and in some parts a faint view of the diseased larvæ in the cells.

[The described symptoms and the photograph indicate a typical case of American foul brood in an advanced stage; in fact, the view here shown is about as good a sample of a comb affected by the disease as we have ever seen.

In this connection it is proper to state that the user of this frame should have inverted it for a few days during the comb-building season. In order to get the bees to build the comb clear up against the bottom-bar, which, for the time being, is on top, the Danzenbaker or any other reversible frame should *always* be so treated. This will make a comb much stronger in the frame, and at the same time shut out all hiding-places for the queen. A non-reversible frame will be quite liable to have a space of ⅜ inch between the combs and bottom-bar. This can be rectified only by the use of perpendicular supports and full sheets of foundation.—ED.]

IN MEMORY OF JULIUS HOFFMAN, INVENTOR OF THE HOFFMAN FRAME.

His Place in Apicultural History.

BY E. R. ROOT.

As stated in our last issue, Mr. Julius Hoffman died on May 3d last, after a lingering illness of nervous prostration. His daughter wrote us that the last journal he ever read was GLEANINGS, a fact which we appreciate more than we can express.

In order to give his place in apicultural history it will be necessary to go back a little. The present editor took charge of this journal late in 1885. He was then fresh from college, and all enthusiasm. The correspondence that developed seemed to indicate that we had fallen into a rut of using beveled edges on hives and frames that were too movable—so movable, in fact, that they would not hold in position when the hives were even carried across the yard by hand. Through this correspondence we learned that there were bee-keepers in Central New York who were working on radically different lines—indeed, were making a success of handling bees in large numbers on closed-end and semi-closed-end frames—a feat that seemed practically impossible to the western bee-keepers. Up until that time only a comparatively small number in Central New York were using these "awful bee-smashers" as they were then termed. The advocates and users of the swinging unspaced Langstroth frame did not see how any intelligent successful bee-keeper, at least, could possibly handle bees on "fixed frames:" indeed, the President of the North American Bee-keepers' Association facetiously remarked to us, "Fixed frames! well, I should say they were fixed. Why, they are glued fast in the hive where no sane man can get them out. They are no good. Better let 'em alone, Ernest."

We did not share the opinion of the speaker; indeed, we believed there was a great deal of merit in automatically spaced frames. To discover, if possible, if they could be handled rapidly and not kill bees was the object of an extended bicycle-trip over the hills of York State among the followers of father Quinby who were still using the closed-end frames.

It will not be necessary, for the purpose of this write-up, to give our complete itinerary, any more than to state that we saw that closed-end frames could be handled by Mr. P. H. Elwood and others just as rapidly as the open-end Langstroth, and that there need be no bee-killing, or at least very little of it; but, unfortunately, this frame with entire closed ends could not be made to fit the hives already in use.

In the mean time Mr. Elwood informed us that Mr. Julius Hoffman, of Canajoharie, N. Y., was using a hanging frame with semi-closed ends that could be used satisfactorily in any Langstroth hive having rabbets to support the top-bars projecting beyond the end-bars of a frame. Naturally we called on that gentleman. He very kindly showed us the frame that he was using. He made no claims to having made any particular invention—modestly acknowledged that he had borrowed some ideas of Dzierzon, his old teacher, and Berlepsch; in fact, he told us how he began using the Berlepsch frame as described and illustrated on page 534 of our May 15th issue for 1905; but as it was adapted for use in the German side-opening hives he was not long in discovering that he would have to use a hive of the top-opening type. In doing so he was compelled to modify materially the frame to such an extent that there was very little left of the Berlepsch.

JULIUS HOFFMAN.

It was this frame as Mr. Hoffman used it that the writer saw in use at his apiaries, and he had at the time something like 700 colonies on them. He was a very successful bee-keeper, made money at keeping bees, and on the occasion of our visit he showed how he could save time by picking up the frames in twos and threes; how, in fact, he could handle a brood-nest split up in halves or thirds. As to killing bees and the frames being glued fast, he proved that neither charge was sustained when rightly handled. So impressed were we with the fact that more colonies could be handled on them in a given time that we adopted them in our yards.

How they were subsequently adopted by thousands of others is a matter of history.

We found Mr. Hoffman to be a man exceptionally modest, claiming no particular distinction as an inventor, but insisting that he had made only a modification of Berlepsch's frame in order that he might use it in a top-opening hive. He never thought of communicating his invention to any bee-journal, much less of patenting it; but Mr. J. H. Nellis, then editor of the *Bee-keepers' Exchange*, seeing the successful and rapid manner in which Mr. Hoffman handled bees on this particular frame, began its manufacture and endeavored to popularize it as early as the early '80's.

Shortly after, Mr. Nellis went out of business, and but little seems to have been known of the frame until we began to write up its merits in 1890 and 1891; and even since that time Mr. Hoffman has written only two or three articles, and then only on special request that he explain how he came to invent the frame, which he did in an article in May 15th GLEANINGS, page 533, 1905, and subsequently in another article by him June 1, p. 593, of the same year.

Mr. Hoffman was born in Silesia, Prussia, October 25, 1838, and would have been 69 in October of this year had he lived. While he was not able to span the great length of life of his great teacher, Dr. Dzierzon, yet it can not be said that he lived for naught to the bee-keeping world, for practically all the apicultural literature on this side of the Atlantic at least, and all bee-supply catalogs, have his name scattered all through. He was known, not for his voluminous writings, for to our certain knowledge all the articles he ever wrote could be counted upon the fingers of one hand. He was made famous for an invention which he never felt was worthy of the name of invention, so modest was he of his attainments. During his many years as a bee-keeper, however, he made a comfortable living, and even away back in 1890 was reputed to be well off.

Mr. Hoffman left a large circle of friends, for he was loved and honored by all who knew him. He is survived by his widow; his son Julius, of Brooklyn; three daughters, Miss Hattie, who lives with her mother; Mrs. Augustus Offermann, of Brooklyn, and Mrs. Louis Bierbauer, Jr., of Canajoharie.

COMB AND EXTRACTED HONEY FROM THE SAME SUPER.

The Construction of the Super; Why the Bees Enter them Readily; the Control of Swarming in Colonies Run for Comb Honey.

BY E. D. TOWNSEND.

[This article and the one to follow in the next issue are of special value, and we hope that comb-honey men, at least, will give them a careful reading. It should, perhaps, be understood that Mr. Townsend has been working on this system for about two years, and a customer of his in the East said that his 4 x 5 comb honey in plain sections was about as fine as any thing that he could secure in the country; in fact, he took it off his hands about as fast as he could produce it, and sold it at prices considerably in excess of the ordinary comb honey produced by bee-keepers generally. How to produce this fine honey, and at the same time control swarming to a great extent, is explained in these articles.

From some experiments we made in years back we feel satisfied that the plan he here proposes is most excellent, and we see no reason why most bee-keepers using a tall s ction could not put this scheme into effect this season. It is possibly true that those who use the shallower supers—those for 4¼ x 4¼ square sections—could use the same principle. We will now let Mr. Townsend explain the system in detail.—ED.]

As the sectional hive is now having its innings, I thought it a good time to describe my hive and system that we are using for producing both comb and extracted honey from the same super.

The hive is of the ten-frame Heddon pattern 5⅞ inches deep, the inside length being 16⅛ inches. The frames are 16 inches long by 5⅛ deep, and have closed ends. A flat tin is nailed on the bottom of each end, projecting in ¼ inch, for the closed-end frames to rest on. The supers are the same as the hive-body. Each section of the hive is of the capacity of five Langstroth frames. The hive is used one, two, or three sections high; thus one can have a hive of five, ten, or fifteen Langstroth-frame capacity without moving a frame. We never handle brood-frames in normal colonies in the production of either comb or extracted honey.

The inside furniture of the super consists of 6 plain slats, ⅞×1⅜×16, for the 24 4×5×1⅜ plain sections to rest on, two combs with center bars, as shown in the engraving, and seven L fence separators, built for four rows of sections. This completes the super, except two little pieces ¼ inch thick and 5 inches long. Two of these are nailed to one side of each super, one in each corner, to hold the frames away from that side of the hive.

Super springs in the opposite corners hold the frame on that side about the same distance away. Arranged this way, the space in a super 14⅛ inches wide is all used to good advantage.

An eight-frame super could be used with a comb on each outside, the same as the ten-frame; but there would be room for only 20 sections instead of 24. It might be necessary to buy a certain width of section to make things come out even.

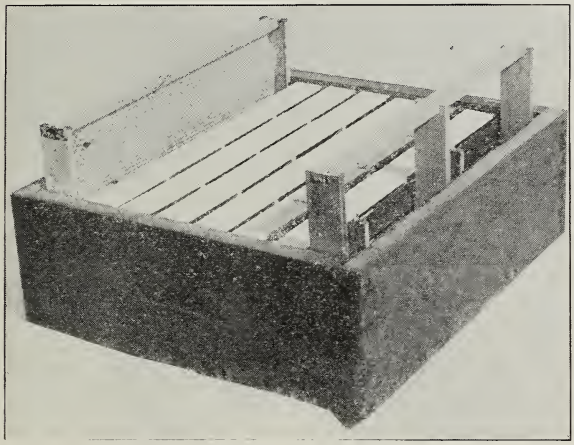
The Danzenbaker super would be especially adapted to this "comb and extracted honey from the same super" system, for a ⅞-inch wide top and bottom bar in the two outside section-holders, with a center-bar in these frames to get the compression in the middle of the super (see engraving), and the two ⅛-inch pieces, would be all the changes necessary. This would then make one of the best supers on the market.

All our shallow brood and super frames are made with the double-groove-and-wedge top bars for fastening the foundation. By making the top-bar ⅞ inch thick, the double groove and wedge can be used.

The center bar holds the center of the super up square and even; and with this short

super we have found it necessary to use but two super-springs—one at each end. Those who have always depended on "bait" sections to entice the bees into the super, and have placed it in the center of the super, will likely think bees will be slow to enter the super when these combs are given at the sides. Usually, however, only one small section is used for a bait comb. Bait sections in an ordinary super can hardly be compared with the full-drawn comb at both sides of the super. The latter bring about the condition found more nearly in an extracted-honey super than in a comb-honey super, and so the bees enter the super much more readily than they would on a comb-honey super with the bait section only.

With the "bait" section the bees begin in the center of the super, or in that part of the super where the bait is placed; then their work extends gradually away from this central location. Many times the progress is so slow toward the outside of the super that the



E. D. TOWNSEND'S SUPER FOR PRODUCING BOTH COMB AND EXTRACTED HONEY; ONE EXTRACTING-FRAME ON EACH SIDE.

central sections, or those first begun, will be finished and sealed over before the outside ones are hardly commenced. The consequence is, that these central sections will be travel-stained long before the outside ones are ready to come off. Here we see the advantage of the section-holder super over the super in which the sections have to be handled separately; for with a super that is finished so unevenly as the one bait-section super usually is, it is necessary to "shift" the sections from the outside to the center to get the super finished up more nearly at the same time. But this is work, and work costs money.

With the super arranged as I have described above, with a good big comb on both sides, every thing is different. The bees rush up just as if it were an extracted-honey super, which it is, to a certain extent. With the ten-frame-width super the bees commence at one side on the comb over that part of the hive that the bees are occupying most. Of course, this is true with the "bait" section super; but in that case the bees commence in the center and then work toward the side of the hive most occupied with bees. But with the full comb at each side of the super the bees commence on one of the combs; and, when this is part full, on the row of sections next the comb. At about this stage they begin to work the comb on the other side of the super; and when it is nearly full the beauty of the system begins to show itself, for then the bees begin to work clear across the super. My! how things do boom for a few days! With every section being drawn out at the same time, this means fancy honey, and lots of it, if the season is favorable.

Last summer these combs seemed to start the bees to work with such a vim that about two-thirds of the colonies forgot to swarm; this, in connection with the management previous to the honey-flow, that I will describe later on, seems to get the bees in (and keep them in) that condition so essential for the best results in the production of honey, whether comb or extracted.

What I mean by "condition" is this: We may have two colonies of bees of the same strength, with the same amount of brood and the same amount of stores — in fact, two colonies that are so nearly alike at the approach of the honey season that you can not tell one from the other; yet one of these two may show up at the end of the honey season with 25 lbs. of surplus and the other with 75 lbs.

You can not lay this difference to the queen, for they had the same number of bees at the commencement of the season, nor can it be laid to the strain of bees, for I have had the conditions change, so that the colony that did the poorest one season did the best the next.

The fact of the case, in my estimation, is that the 25-lb. colony was out of condition, and I will try to tell you how to keep them in this desirable condition clear through the season.

HOW TO KEEP THE COLONIES IN PROPER CONDITION TO PREVENT SWARMING.

The system is as follows: In November the bees are put into clamps with from 25 to 30 lbs. of honey for their winter and spring stores. As soon as the frost is out of the ground in spring, usually the first of April in Kalkaska Co., where our comb-honey yard is, they are dug out and wrapped in building-paper for spring protection. There is nothing more done to them until about the 20th or the 25th of May. When the indications are there will be fairly good weather, the most of the freezing nights being over, we remove the paper from all the strong and medium colonies, and give them comb room of some kind. Those with very pro

lific queens are given one section of a hive, additional, at the bottom. Many times the queen does not use it, but it gives them additional clustering-room, and once in a while a queen will use it. The moderately strong colonies, not needing additional room for brood-rearing, are given an extracting-super on top, first putting on a queen-excluder, as we do not want any brood raised in our nice white combs that we use with our comb-honey system.

The weak swarms are put on one set of combs to be united at the approach of the honey season. We get the bodies to give to the strong colonies, mentioned above, in this way, by taking them from weak colonies and from colonies that did not live through the winter. The majority of the dead colonies are those that went into winter quarters queenless, or that, for some reason or other, were not in a normal condition when put into winter quarters. Many of these came out with their hives heavy with honey. All such are distributed according to the amount of honey they contain; that is, the heaviest are given to those colonies having the least honey. This plan not only keeps the bees in good condition, and free from the swarming fever, but gives them an additional amount of honey just at the time when they would be most likely to need it.

Those familiar with this location will remember that May 20th or 25th is two or three weeks previous to our main honey-flow in June. This period is the critical time; for, should we allow our bees to feel just a little bit crowded for clustering room during this period, we should be quite likely to have those crowded colonies in the same condition as the one I mentioned that produced the 25 lbs. of honey.

This management, in connection with the two drawn combs at the outside of our super, will keep down swarming and produce a larger per cent of fancy comb honey than any other system we ever tried.

Remus, Mich.

To be continued.

WAX-RENDERING.

Steam and Hot-water Presses for Further Treating the Refuse from the Solar Extractor.

BY R. C. AIKIN.

In the first two articles we discussed solar extractors. We will now take up the treatment of the refuse from the solar in steam and hot water presses. I have mentioned pressing out wax between boards many years ago, using my own weight as the power. I also experimented years ago with twisting the slumgum in a bag, thus obtaining pressure. A few years ago, when the new steam-machines came out and were highly spoken of, I read eagerly what was said, but always with a keen sense of disappointment. They gave little but what I had gone over years before. Then the machines were so little and puttering, altogether I could not get much interested in them.

Next came out the Root-German press with screw pressure. This machine embodied exactly the principles I had used over 20 years before, but with the screw-pressure feature added. I soon possessed one of these machines, and have put hundreds of pounds of wax through it—have the machine yet, but it was always a source of worriment to me because of its inconvenience in getting into to "paw over the slumgum," and also because it was so frail I was always in fear of bursting it. It did break occasionally, and finally broke so badly it was past repairing when I bought new insides for it. Let me say right here to the Root Co. that their Root-German press is not the machine we are looking for and must have. Reasons will appear later.

In the mean time the Rauchfuss Brothers, of Denver, were pressing out wax from slumgum such as most of us were burning, and seemed to think it paid. Some others were following suit. In my neighboring town of Longmont, Mr. J. B. Adams was using a big lard-press (I think he was at it before the Rauchfuss Brothers), cooking the combs, etc., in a big tank and dipping it out to press in the open. I took a lot of slumgum to his place and worked it with his press. It seemed fully as effective as the Root machine, and much more rapid, but I did not like pressing away from the water or steam. Apple pomace can be worked in the cold; but wax (that hardens so quickly) is not a suitable article to handle except under great heat. I was thoroughly convinced several years ago that it should be pressed while immersed in hot water.

THE HERSHISER IDEA.

The plan of washing out the wax, as so nicely illustrated by our Buffalo friend, is the very idea I have been studying on for some eight or ten years, but I did not expect to get it accomplished the way he goes at it, nor do I think his machine is by any means perfection, though I believe it to be the best out. I must say that I have not perfected any plan or machine, but it can be done. There is a way that will leave the Hershiser mill as far behind as the old wash-boiler and bag method is behind his invention. Mr. H., nevertheless, is worthy of honor and fame for the stride he has made.

As above stated I did for several years use a Root-German machine, but all the time with disgust, because, to make a 50-pound run of wax from slumgum from the solar that still held half its wax, was a "whalin' big day's work." I used to run the thing from 5 A.M. to 10 P.M., and would average about 50 pounds of wax. I think my best run was 70 pounds; from 30 to 40 was the usual run. Lots of men get their $5 to $10 a day, and not work half so long or hard. I object to having to do such work simply for *wages*.

I then bought a big cheese-press screw, second-hand—paid 75 cents for it; remodeled it and built a press for myself. I could have used a bench-screw, but wanted some-

thing that would do business, and I got it in my new home-made press, using the cheese-press screw. I believe it is a two-inch one. For this press I fitted up a tank so that the screw works right in the tank, and the pressure is all done under boiling water. The stuff to be pressed is put into bags (burlap bran-bags), and thoroughly cooked, and then put into the hoop and pressed, and it is a good hard squeeze too.

While the bags are cooking in the big vat made for this purpose they are stirred and punched and twisted, and much wax comes out and may be skimmed off; but when the bag goes under the press, the golden streams that come from it show how futile have been the punchings and twistings so far as getting out the wax is concerned. I turn the screw rather tight, then wait a little and turn it some more, at short intervals screwing down a little more for several times, keeping the pressure on probably from ten to fifteen minutes. I next release and shove the hoop from under the press and lift the follower and stir and paw over the cheese until it is again thoroughly saturated with water, when it is again put through the same process under the screw. If I happen to get the cheese a little too large I give more time and pawing; but I try to have a cheese that, when fairly well pressed, will not be over one to 1¼ inches thick. I have repeatedly made tests to find out how much wax was gotten from the second pressing, and found it to be sufficient to make me several dollars a day, so I rarely let a cheese get through without giving it a second watering and squeezing. If I have gotten a very large cheese it gets a third dose usually.

One week ago I pressed from combs mainly—a small portion was solar slumgum—just about 200 pounds of wax. The slumgum left from this I put through the mill two or three days later to test it. It took me almost a full day, and yielded seven or eight pounds of wax—mighty poor pay for that kind of work. I had before made some tests in a small way to determine if my machine and method were getting about all the wax. They were not so conclusive as this one, and I now think I can get so nearly all that it is as effective as any machine out. In reality I am using the Hershiser idea of washing out the wax, and that is what I have contended for many years we must do.

As for the speed of this machine of mine, I can get out just about twice as much wax, time for time, as with the Root-German, and I think it is much more effective in getting all the wax. And lest you may think I did not work the Root machine well I will set you right there by telling you that I pawed over as often as with my press, and poured into the cheese boiling water from a tea-kettle, then put on all the pressure the thing would stand, and also gave as much time. With my machine I run from 100 to 150 pounds a day. If I remember aright I once made one run of 170.

But, of course, every bee-keeper can not have such a plant as I have for the work. Under ordinary conditions, hiring builders and buying all material new, such an outfit can not be put up for $100, counting in my solar. It is too expensive for any but an extensive bee-keeper or some one who does work for others as well as for himself. I can take the combs, etc., of bee-keepers and run them, making wages for myself, and yet turn over to the owners as much wax as they ordinarily get. One man brought me his solar slumgum which he thought was just about clean of wax, and he had worked it well too; but I took from it almost as much wax as his first run. He afterward told me he thought I was talking through my hat when I said I could get the wax from it.

But I am not yet satisfied by any means. My machine is too slow. It can be improved, and I know it. We must have a machine that will put the stuff through several times as fast, and enable one having a plant to work the neighbors' stuff and return them more wax than they can get with the small machines, and still leave the operator a good margin. I have faith it can and will be done in the near future. I think I can see how it is possible with expensive machinery, but for a small outfit I have nothing but very vague ideas.

CLARIFYING, AND THE COLOR OF WAX.

Wax run from the solar is almost invariably yellow unless burned or scorched with too much heat. Yet I have a few times had it come dark from the solar, and could not account for it. Just last week, when pressing out a lot of wax, I had on hand some 25 or 30 pounds of nice yellow pieces that came from the solar. These I wanted to remelt and cake as they were not as clear of sediment and honey as I wished. I put them into a copper boiler that I use constantly for such purposes, and put in clear fresh water from our city system. It is the purest of snow water from the mountains. After this wax had cooled it was very much darkened, and yet the water left under the cake was almost clear. This is not the only experience of the kind I have had, and I can not explain it. I hope somebody can give me light on the subject.

Here is another experience that has been many times repeated. When I am making a big run of wax with the press, of course I always start the run, filling the tanks with perfectly clear water from the water system, as it is soft snow water. The continued use of this water melting combs containing honey, pollen, and all the filth and dirt that will be found in a lot of old combs, many as black as a pot, makes the water almost a syrup by night or by the second day's run, yet the last run of wax from this dirty mix seems to be yellower than the first. Somebody will say it is the pollen that gives color; but I do not believe that. The only explanation I can give is that, as the water gets more and more honey in it, its specific gravity becomes greater, and this heavy sýrupy water saturating the foreign matter that goes with the wax, such as is found on the bottom of wax cakes, makes it so heavy it settles quickly

out of the wax. But this does not explain why nice yellow wax melted in clear water comes out dark, so as yet I must give up the problem but hope to make some experiments. I certainly have been surprised at the yellow wax I obtain from the dirtiest filthy mass of both water and combs. I feel I must know why. I have sometimes salted water to make it more dense to precipitate the dark matter that colors wax sometimes, but am not positive that it was a success because I did not make comparative tests.

When pressing I have been in the habit of dumping the wax and water, obtained by skimming from the tanks, into a double tank where I could keep it warm and liquid all day to be dipped off for caking in the evening, letting it stand over night to cool. This plan enables me to accumulate enough wax that, at the close of the day, when I dip all except the last half-inch or so, is pure wax; thus if I have made a hundred-pound run I have but one little batch of it just at the last that has the settlings in it.

My present machinery has seen quite a little service, and is somewhat out of repair—especially the cooking apparatus, which was very cheaply constructed, so I am just about to rebuild and make some changes which I feel to be improvements. I will go on using the same screw press, but I do not think the coming mill will use the screw at all. If used it will be in a different way from present methods. I expect to continue studying the problem, and I feel that there must be some device perfected that will do rapid and effective wax-rendering. I know it can be done, but the perfecting of the machinery is where the rub comes in. I believe Mr. Hershiser to be on the right track, but his mill is too tedious. A rapid alternating between the squeeze and release is what we want. I have known for years that long-continued pressure was not what we were after. There must be pressure, or some means of either breaking up the cocoons or in some way liberating the wax from their pockets; then enough water run through to wash it out will soon complete the work. Who will perfect the apparatus and give it to us at a reasonable cost?

Loveland, Col.

[The solution of the wax-press question probably is that, for the extensive bee-keeper, and one who can, therefore, afford the expense, the hot-water system is the best. That is, the combination of a powerful screw applying pressure upon the refuse immersed in boiling hot water will probably be the most satisfactory outfit for the man who renders enough wax to warrant the expense. But for the smaller producer it would seem that the inexpensive unheated press is still the best outfit. Such a press, however, is not suitable for pressing great quantities of refuse at a time. The secret of its great capacity lies in the fact that it will handle small lots of refuse, one after another, so rapidly. By constantly adding fresh lots of boiling-hot melted comb, the press, followers, etc., are kept steaming hot, with the result that the wax runs out before it has a chance to chill. On the other hand, if too much melted comb is dipped into the press it takes a much longer time relatively to get the wax out, and chilling is the sure result. It is important to keep the press hot. If you had tried pressing but a small quantity at a time in Mr. Adams' cheese-press you probably would have done just as rapid and much more thorough work.

It seems probable that all wax contains traces of acid, for the reason that, when it is kept above the melting-point for any great length of time in metal vessels, it takes on a color in some way characteristic of that metal. For instance, many of the salts obtained by treating copper with acid are blue or green. If wax is kept melted too long in a copper vessel the tell-tale green color appears. If the temperature is raised considerably, wax of a brilliant green color is the result. The experiments recorded in the following letter from F. A. Salisbury will help to solve some of these questions.—ED.]

DISCOLORATION OF WAX.

The Effect of Different Metals Used in the Construction of Melting-Vessels.

BY F. A. SALISBURY.

We have recently been conducting some experiments to show the effect of metals on melted wax. We used small dishes made of each kind of metal, and put some wax, about the size of a good-sized walnut, in each dish and placed it about 2½ inches above a gas-jet. The frame was adjusted so the wax would be kept at a temperature of about 180 degrees. It was left over the jet in each instance 24 hours continuously.

The samples show just what metal is the best in which to melt wax, as all are different in color. It will be safe to conclude that any metal changes the color more or less. Of all tried, copper was the very worst. Next came zinc; then clean iron; next, tin; next, rusty iron; and, lastly, common black iron. I had always supposed that copper would be the best metal in which to melt wax; but the sample plainly shows that it ought not to be used — at least, no one would want to chew the sample. Zinc should not be used, as the color is very dark. I should say tin or black iron would be the most practical, all things considered.

The dishes were made of sheet metal in each instance. Almost all the colors of the rainbow can be had from one sample by using different metals. Does this not explain why cakes of wax as they come from different parties are of different colors?

RENDERING WAX IN A WOODEN PRESS.

I have never taken the slumgum from the wooden press and remelted it, as I did not think it was necessary. However, there may have been quite a little wax left in it. I can't say. I once made up ten barrels of old comb that was packed in with a pounder

and shipped to us from the eastern part of the State; and from the ten barrels I got 500 lbs. of wax. This was over 20 years ago, and was made up on a press from an idea that I got about 25 years ago from Wm. Cary, of Massachusetts.

I should like to add to your directions for using the Hatch press, as given in Jan. 15th GLEANINGS, the following: On p. 102, at top of second column, you say, "push the boiler to the edge of the stove. The best work will be done with the old combs kept boiling all the time. There will be no danger about the wax burning so long as there is water in the boiler. When ready to dip into the press, stir the mush thoroughly so that the part that was floating on top would be stirred under." You probably noticed that, if this was left on top for a time, a thin film of wax would cover all. By stirring and keeping boiling, this will be kept from so doing, and will work better in pressing.

Syracuse, N. Y.

[These experiments are very interesting, for they bring out facts that are of practical interest to all producers of and dealers in wax. It seems now to be pretty well proven that all wax has a slightly acid reaction, and so, when it is kept for any length of time at a high temperature, in contact with a metal, a chemical action seems to set in between the acid in the wax and the metal. This would account for the great discoloration, especially of the wax melted in the copper dish, for this sample was a brilliant bluish green, with not a trace of the former yellow color. Most of the salts of copper are either blue or green in color, so it would be highly probable that the color of the sample from the copper dish could be accounted for by the presence of acid. The wax from the zinc dish was very dark—a deep brown instead of the original lemon yellow. The samples from the other dishes were also darker than the original, although not so dark as those from the copper and the zinc.

It is thus shown quite conclusively that copper and zinc had better not be used in connection with wax. The other metals are not so objectionable, and we think it would be perfectly safe to use black iron or tin. In our opinion, the wax from the tin dish had a better color than any of the rest that was heated. If, instead of 24 hours, the wax had been kept melted but one hour in the metal dishes, there would probably not have been any discoloration, even to that melted in copper, unless the temperature had been kept pretty high. But since there is always some danger of overheating, it would be better in the end to use iron or tin.

The wax passes through the Hatch press so quickly that there is no discoloration—at least we always obtain the brightest yellow wax. We have tried an unheated press, constructed entirely of wood, side by side with one made of tin, and in rendering the same batch of melted comb the wax from the two presses showed no difference in color. Steam and hot-water presses, however, because of the greater and longer continued heat, are sure to discolor the wax more or less, and for this reason it would be desirable to have them constructed of wood. But as this is clearly impracticable, tin or black iron is the best material.

Our readers will remember that Mr. Sailsbury is an enthusiast of the unheated press for rendering wax. In the May 15th issue of GLEANINGS for 1903 he described his press and gave his method of rendering. It was this article which first attracted our attention to the fact that the unheated press yields wax that needs no refining.

If Mr. Salisbury will take some of the refuse from his press, and run it through a second time, we believe he will find enough wax to warrant the extra time and labor. After the two treatments, there should not be more than 2 per cent of the wax wasted; but, if desired, the refuse can be run through a third time, and the percentage of loss reduced to less than 1 per cent; and the strange thing about it is, that even three treatments can be given in almost the same time that it would take to extract the wax in a hot-water press costing considerably more, and yielding a slightly darker-colored wax besides.

Yes, it is better to have the melted combs very hot up to the time of pressing. In our directions for operating the Hatch press we advise the removal of the boiler to the edge of the stove—not to stop the comb from boiling, but to keep it from boiling too hard. When the wax boils up on the hot dry side of the boiler it is quite apt to become darkened. A boiler full of melted combs requires less attention if kept on the edge of the stove so that it boils but slowly.—ED.]

LABOR SONG.

BY EUGENE SECOR.

When June is rich with odors rare,
And birds their loves declare
From copse and wood and orchard-top
As if they'd never stop,
I love to sit as day declines,
And longer grow the lines,
And hear the winging home of bees
Circling above the trees.

The nectar-laden bees
Home-coming through the trees
Wing this refrain: Toil is not in vain.
For work is king of ease.

They bring the scent of clover-blooms
And other choice perfumes;
They hide them in the waxen bells
Where royal favor dwells,
And labor sweetens all the day
With peace for such as they
Who are content to push the load
Along life's hilly road.

The happy toiling bees,
Home-coming through the trees.
Bring back this truth: Forget, forsooth,
That work is better than ease.

Forest City, Ia.

CARNIOLAN BEES; THEIR POINTS OF SUPERIORITY; RECORD-BOOKS.

I bought a tested Carniolan queen in May, 1904; and as there are no Carniolans here but mine I have tried their many curious ways, and find that you can not deal with them or manipulate them along the same lines of either blacks or Italians. I have the red-clover Italians, the imported Italians, the Carniolans, and the pure blacks, and this is how I grade them by their honey-gathering qualities:

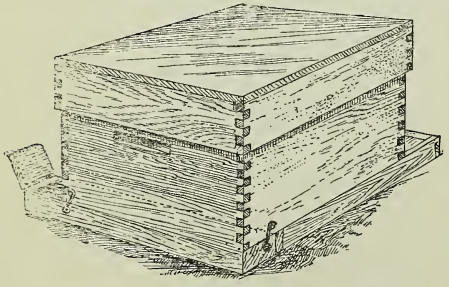
Carnio-Italian cross, 1. Red-clover Italian, 2. Carniolan (Mr. Weber's) 3. Red-clover cross and imported and improved cross, 4. All sorts of crosses from these above, 5. Pure blacks, 6.

My Carnio-Italian colonies are the strongest in bees. I kept a record of my bees during 1905, and will never try to keep bees again without my book of record of my various manipulations of my bees as well as any others I may care for.

Harms, Tenn. J. A. BEARDEN.

SOME EXPERIENCE WITH DIFFERENT FEEDERS; HOW TO HOLD THE ALEXANDER FEEDER IN PLACE.

My first feeder was of the Doolittle division-board type. It is good in feeding weak colonies, but is a nuisance in getting in and out, and my Danzenbaker pattern at first was useless because the oil-cloth brood-chamber covering fitted so closely as to keep the bees out of the feeder. Two or three half-inch holes in the sides just below the top



TWO HOOKS AND EYES TO HOLD ALEXANDER FEEDER IN POSITION.

gave proper access to the syrup, and cured that defect nicely.

Mr. Boardman's entrance feeder (I have the quart size) has its good points; but my bees do not seem to use it in cold weather nor at night. It puzzled me mightily in exchanging a full for an empty jar to avoid crushing bees beneath it; and I found it necessary to drive a staple to support the jar away from the feeder floor.

The Miller feeder is very good—at least *now* I think it is; but I didn't when I first tried to use it.

Just at present the Alexander (or improved Simplicity) feeder seems to be in vogue. But why aren't some brass hooks and eyes included? Two would answer for those to use who have their hives on stands or bricks. Comparatively few, I fancy, are so situated as not to require some form of fastener in applying the feeder. An amateur would appreciate, also, a bit of wire screening to prevent the bees coming out while he is putting the feed in; but I suppose that is too much to expect. C. G. DICKSON.

Kensington, Md.

[The scheme of attaching an Alexander feeder to the hive by means of hooks is very simple and practicable.—ED.]

THE ALEXANDER METHOD OF BUILDING UP WEAK COLONIES; PROVIDING AN ENTRANCE FOR WEAK COLONIES AT FIRST.

I was much interested in your symposium on Alexander's building up weak colonies as given in GLEANINGS for March 15. I have had some experience along these lines, both pro and con.

An hour or two before I put the weak colony over the strong one, I take a double-screened frame to the hive I have selected. I quietly take off the cover, put on the screen, and put the cover on over them At dusk I bring the weak colony, take the cover off the other colony, and set the weak one on the screen. At the end of the screen a piece is cut out of the end cleat, and the upper wire is pressed down $\frac{5}{8}$ inch for entrance to the weak colony, which I leave on two days. By this time the bees get the same scent, when I take off the double screen, put on the queen-excluder, close the outside entrance to the weak colony, and all is peace between the two colonies. At first I was afraid that having outside entrances, one over the other, the bees might enter the wrong opening and get killed; but no trouble ensued.

Alpine, Cal. E. P. ST. JOHN.

[Dr. Miller and others report favorably on the use of the wire cloth.—ED.]

PRONUNCIATION OF PROPOLIS; BEE-STING POISON, AND ITS RELATION TO RHEUMATISM.

Let a new member of your large family interject a few remarks anent the discussion of the word "propolis." I am inclined to take the Century Dictionary for my authority, which gives the pronunciation of *prop-o-lis*. Were it a Latin word, so that we could put the accent on the penultimate syllable, pro-*po*-lis, it would be vastly more euphonic; but as it is Greek in its derivation, I suppose we shall have to *prop*.

Another matter. I am getting ready during this winter for my first invasion of the bee-field; and seeing a mention lately that queens sometimes fight through the perforat-

ed zinc I at once got things ready to make a screen with two sheets of zinc ½ inch apart so that they can not fight, for the reason that I do not care to have my first efforts spoiled by a pair of combative girl bees.

Coming to something that I know something about, theoretically at any rate, I wish to allude to a question I saw in GLEANINGS, the writer of which asked if bee-stings would cause rheumatism, and the party goes on to state that he was stung, and (therefore?) had rheumatism.

The friend neglected to state if he had ever had the trouble before being stung, which leaves the supposition that he never had. From my personal observation, I will state that on a person affected with the "rheumatic diathesis," that is, one in whom the uric acid is already in the blood in excess, a beesting could very easily cause an attack of rheumatism by causing the uric acid to crystallize, just as it would from any sudden shock, as cold or severe mental shock. I am somewhat inclined to be troubled with rheumatism—no one can expect to be entirely exempt—and in my case it took the form of uticaria, or hives. While a greenhorn with bees, I am quite indifferent to their stings, and got a matter of a few dozen stings stuck into me. I must mention that what our mothers use to call "hives" is almost certainly due to the same specific poison—uric acid—which causes rheumatism. In the spring I have to clip my first queen. I'd sooner go over again my first experience in roping a steer. A. F. BONNEY, M. D.

Buck Grove, Iowa.

SWEET CLOVER; THE RESULTS OF SOME EXPERIMENTS IN GROWING IT ON LOOSE AND HARD SOIL.

I notice on p. 1048, of last year, that some one thinks sweet clover will grow on cultivated ground the same as anywhere else. Last spring I purchased 75 lbs. of white unhulled sweet-clover seed, prepared my ground (about five acres) and sowed early in spring. It came up nicely, and it seemed as if there would be a fine stand; but as the summer went by, the clover gradually disappeared; and by fall there was scarcely a stalk to be found. I think that, on account of the ground being loose, it perished; for during the time there was very little rain.

During a very wet spring and summer it might do all right on loose ground; but in a dry time I think it would be a complete failure.

I now have several hives of bees, and I wanted the clover for my bees, and also while it was for bees it was for my ground also. As a soiler it has no equal. The roots penetrate very deeply; and as it is a biennial it dies every two years and leaves the roots to decay in the ground, making it very fertile. During the same year I sowed some on hard clay ground, where nothing else would grow, and, to my surprise, have a good stand.

I find that, as soon as it takes on poor clay soil, it soon makes it fertile, and other grass soon crowds it out, as the young plants can easily be smothered out.

As a forage-plant it is very good. My horses and cows are very fond of it in the spring. I sowed a small patch a few years ago for my bees, thinking nothing would eat it; but my cow kept it close to the ground, and not a stalk was allowed to bloom.

Bedford, Ky. E. S. HUDSON.

ROBBER-FLIES; THE HARM THEY ARE ABLE TO DO; BEE-MARTINS NOT NECESSARILY A NUISANCE AROUND AN APIARY.

I am sending you, in a small cage, one of the worst enemies there is in this country to the virgin queens. In fact, they are so numerous from the first of August until frost that it is next to impossible for a virgin queen to get back to her nucleus when she takes her wedding-trip. On an average I can probably get three out of twenty mated. Please give us a sketch or half-tone of the gentleman, and name him. This insect seizes the bee or queen, preferably on the wing, while near the ground, and inflicts a death-blow with the sharp beak. If you catch this insect by the tail it will also pierce you, and the pain is more severe than the pain from a honey-bee. W. T. CRAWFORD.

Hineston, La.

[The above question was sent to Prof. H. A. Surface for answer. His reply is below:]

The fly which was sent to you by Mr. W. T. Crawford was received and numbered (7651) in our collection, and identified by us as a robber-fly, scientific name *Erax maculatus*. This is one of the predaceous flies that feed upon various kinds of insects, and is known to be destructive to the bee. You will remember that, in a publication of the U. S. Biological Survey, Washington, D. C., the food of the king-bird, or bee-martin, was carefully considered from the examination of hundreds of stomachs of this particular bird. Results showed the remarkable fact that there were many more of these robber flies in the stomachs of these king-birds than there were of the bee. In fact, only one bird in a hundred was found to have eaten worker bees, although several had eaten drones. The fact that this fly is taken extensively by this bird, and that it is also an enemy of the bee, shows that the king-bird is of considerable value around the apiary, notwithstanding his reputation. I must acknowledge that I never knew the depredations of the robber fly to be so serious as indicated in the letter by Mr. Crawford, in which he says that not more than three out of twenty of his newly mated queens returned to the hives, because the others are destroyed by this pest.

Harrisburg, Pa. H. A. SURFACE,
Economic Zoologist.

UNFINISHED SECTIONS.

I should like to know what to do with last year's unfilled sections. N. H. KEIZER.

La Crosse, Wis

[Last year's unfinished sections may be used as baits in comb-honey supers to a very good advantage. If you have a large number we would advise you to cut out the combs and sell them for chunk honey.—ED.]

OUR HOMES

by A. I. ROOT

Cast thy bread upon the waters; for thou shalt find it after many days.—ECC. 11:1.

And he took his staff in his hand, and chose him five smooth stones out of the brook, and put them in the shepherd's bag which he had, even in a scrip; and his sling was in his hand; and he drew near to the Philistine.—I. SAM. 17:40.

God is our strength.—PSALM 46:1.

God works through humanity. When he answers our prayers it generally comes about by moving the hearts of some of our fellowmen to come to our relief; in fact, the promise in the first text, that the bread cast upon the waters shall come to us after many days, bears largely on our readiness and willingness to respond to God's call or to the prompting influences of the Holy Spirit. Not only is it our duty to cast our bread on the waters to the right and left, but there is a responsibility laid on us each and all, to be ready to assist God and to spring with alacrity, so that those who have cast their bread upon the waters, perhaps before we came into the world, may find their reward in the services that we may render in response to the promptings of the Holy Spirit.

The little story I am about to tell you today may seem at first very commonplace, and perhaps very selfish. You may be tempted to wonder why I have so much to say about my own family matters. But they are not only of interest to me, as recollection goes back, but may prove a helpful lesson to humanity of the present age. Be patient, friends, for I believe this Home paper has been prompted by the Holy Spirit and that it may give hope and courage to many a dear brother and sister who are feeling helpless and hopeless under the burdens that God seems to have imposed on them.

One of the first things I can recollect, as memory goes back to my early childhood, is the advent of a little sister in our humble home. I remember objecting because the mother's care promised to be given largely to another instead of her weak invalid boy of three or four years old. One of the good women, however, cheered me up by telling me the little blue-eyed sister would be my companion and a comfort to me, and perhaps she would make me some pants to wear like papa's when we both got older; and that blue-eyed sister did indeed come to be a companion and a devoted friend all through the years of childhood. As I was odd and somewhat different from other children, various differences arose; but this youngest sister, as soon as she was old enough, always stood by me and defended me. Much has been said about the unselfish devotion of the wife and mother. Now I think, as memory goes back, that the loving sister has not always had due credit. This sister always had something nice saved up for me when I returned after any absence. If somebody distributed presents among the family of seven (there were seven of us finally—three boys and four girls), Sarah always gave me a part of her portion, and sometimes *all* of it, saying she did not care particularly for it; but I found out afterward she *did* care, perhaps as much as I did; and all through her pure gentle life she seemed to find it more blessed to give than to receive. When I was criticised or punished, this sister seemed to feel the infliction just as much as I did, and perhaps more. What troubles me just now, as memory goes back, is that I can not recall a single instance where I made any adequate return for this unselfish devotion all through childhood, and until I had a home of my own. She, dear gentle loving sister, cast her bread upon the waters thus freely without any hope or thought of finding it after many days. I am afraid I did not even *thank* the dear child for her persistent, unselfish devotion to my poor self. May God forgive me; and if you, dear reader, can look back as I do and remember a like extended service, God grant that this may be a reminder, and that you may at once make haste to let that sister know the promise holds good, even if it should be "after many days" that the bread returns to the lavish giver.

I can not remember that this sister and I ever had the smallest particle of difference unless it was when I became old enough to think of the sister of somebody else. When I was away at school my father moved on to a farm near Medina. Well, in this new locality the sister found a friend among the schoolgirls, and they became very intimate. In one of her letters to me she said she had found the best girl in the whole wide world for me for a wife. You see the dear child, to cap the climax of all her loving service, had considered my companion for life. She not only wrote to me about this dear schoolgirl friend, but I think she told the friend something of her absent brother—the brother whom she, in her girlish devotion, imagined to be all that was good and noble and true. When I arrived home, of course we two were introduced. I do not know but my sister Sarah feared her plans would not work, and that I might not think as she did about her new-found friend. Well, I am ashamed to tell you that her plans not only worked well but *too* well. Of course, she had not planned (poor child!) to be left out in the cold; but she was striving to do both of us a great service; and I fear that, to be honest, I shall have to confess that I almost forgot the existence of my own kind sister in giving all my attention, time, and thought to this sister of somebody else. I remember taking a new book—in fact, I had been taking every thing else—over to this "best girl" of mine. When my own sister remonstrated a little because she had not yet finished the book, I took offense, and I fear I spoke unkindly to her, almost for the first time in my life. I wonder

how many other men and boys there are in this world of ours who are as selfish and indifferent toward the devoted sister as I was then. If there are many such, may God have mercy on us. I was not a professing Christian at the time. I was not asking the Savior day by day to lead me and help me to see and correct my own grievous sins. As memory goes back I think to myself, what would I give if I could live some of those days over again? We have some old pictures of the children of our humble home; for photography was invented at just about the time I write; and as I look upon the old faded picture of that sister, and see again the unsuspecting innocence of that childish face—the face of one who knew so little of the evil and wrong that are going on in this world of ours—I am reminded that perhaps some of us are more indebted than we shall ever know to this unselfish devotion of some sister, either younger or older than ourselves.

I will now explain, dear friends, what it is that has prompted me to go back to what happened about fifty years ago. I have just paid that sister a visit at her home in Northern Michigan. She has a beautiful home of her own, and has spent her life, as you might expect, in untiring devotion in bringing up a good-sized family in wisdom's ways. God has rewarded her; but just now when the gray hairs are beginning to add an additional charm to that sweet and gentle face, the *great white plague* has laid its grasp upon her. Pneumonia set in some time last fall, and kept her prostrated during the winter; and when spring came she did not rally as her friends expected and hoped she would. There was a doctor in the family, and of course he has done every thing that could be done to save the loved mother. I begged that she be taken to our Florida home last winter; but there was no time when she was able to take a long trip, and we are now planning to try the sea-breezes of that southern climate. The problem that confronts us is to get her up to that point where she can take the trip by next winter. The task before myself and her large circle of relatives is not one that we alone have to face. Tuberculosis is taking off more people than any other one disease; and it is one that constantly threatens people of mature or advanced age. Our greatest and best physicians are bending their energies to the task of telling the world what can be done. Let me illustrate it in this way:

Suppose some fierce wild beast were pursuing one of your own family, say a wife or mother or sister, and that all agreed this wild beast can not be killed. The doctors nearly all agree to that. He may be diverted off in some other direction, as people sometimes throw down their clothing to gain a little advantage in time over some ravening wolf. It is a cruel, relentless, unsparing wild beast that is pursuing and running down some of the ablest men and women of our land. Like Goliah of old we are *all* afraid of him. Our ablest physicians tell us there is but little use in giving the patient medicine. In fact, most of the remedies may weaken the patient and defeat our purpose of trying to build him up. What shall we do? What did the people do in Goliah's time? Well, to tell the truth they did comparatively nothing. They let this giant come out day by day and challenge not only their best and ablest men, but whole armies.

Finally David, the shepherd boy, came on the scene. He disdained their artillery of war just as the great white plague laughs in derision at our doctors with all their array of drugs and medicines. David slew the giant, and the weapon with which he did it was a sling, and a pebble from the brook. God called David, and David not only listened, but obeyed the call with a glad and boyish alacrity. He was ready and willing to respond to the call. I am sure, dear friends, that God in a like manner is calling us. He will deliver his children from *all* the giants that stand across our way if we only put our trust in him and go forward. We are making headway against the giant Intemperance, and may God be praised for that.

In a like manner we are going to make headway against this other giant, the great White Plague. You may think my figure a little preposterous when I suggest that God has called my poor self to do what I can to slay the giant. Where is a sling such as David used? Well, I think it is the good robust health he has given me now when I am toward 70 years of age. Do you want to know where I shall find the "five smooth stones"? Why, bless your heart, I have been holding them up to your gaze for months past. I did not exactly recognize them myself nor comprehend how God wished me to use them; but it begins to be plain now. Up in the cabin in the woods, all alone, I knelt down and asked God to make it plain to me *why* he called me away from home and friends, and why he has seen fit to bless me with such happiness and joy. When I was down at our cottage on the island during the past winter I knelt in the same way and asked him to make it plain to me how I could be of benefit to my fellow-men in responding to these calls.

Last Sunday evening it was my privilege to speak to a houseful of young people in that little church over among the hills near the cabin in the woods. I said in my talk, "Dear friends, my greatest desire in life now is to be where God wants me to be most. And I firmly believe that he wants me here to-night more than he wants me anywhere else in the great wide world; and, furthermore, that he has sent me as a messenger to deliver a message to you. I am on "the King's business"—

> An ambassador to be
> Of realms beyond the sea;
> I am here on business for my King.*

*We are planning to give you the entire hymn, "The King's Business," words and music, here in GLEANINGS, and then you can all sing it; and if it gives you inspiration, and faith in God, and joy and happiness, as you sing it about your daily task, in the way it has lifted me up from care and worry, I shall be glad. The above little stanza is taken from this hymn.

And I feel convinced that I have a message to-day of great importance to the readers of GLEANINGS. The possibilities God has placed in my hand to fight this giant are flowers grown in the open air; chickens in the open air, of course; bees always in the open air, and all similar industries. Sometimes my conscience has troubled me for deserting business where I might be of such great help, and spending my time in fussing with flowers, chickens, bees, etc.; but I have been so blest in the work—such great thrills of happiness have come—that I could not doubt it was God's hand. When I talked with the physician I have mentioned, Dr. McClarty, of Manistee, Mich., I said, "Doctor, I think I know my sister, her disposition, and tastes, better than anybody else. She has always been fond of flowers and gardening. I know she would like bees and chickens. She may not have much strength; but if she could be persuaded to use that little strength out in the open air, in something she is deeply interested in, I think she would gain an appetite and pick up quicker in that way than any other."

His reply was something as follows:

"Mr. Root, what you suggest is the *very best thing in the world.* Furthermore", (and he laid his hand on my knee to add emphasis), "what you say is not only the *best* thing in the world, but it is almost the *only* thing."

Now, this physician is well up with the times. He knows about all the new discoveries and inventions that have been made for the cure of tuberculosis. He is not only well read, but he has traveled; and if ever a doctor was unbiased, this one is. He, like myself, is bound to leave no stone unturned to save that mother and sister. God helping me, this gentle, kind, and loving sister of mine who has all her life cast her bread on the waters so unsparingly, shall yet, God helping her, find at least some of it before she dies. God called me off into the woods, perhaps to save my own health and build me up for the work he has for me to do, just as he called Moses (begging your pardon again, dear reader, for so much assumption), just as he is calling *all* of us. There never will be in this world of ours too many who honestly believe they are called of God, as was Moses and David and Joseph, and thousands of others. The call may include dropping business, perhaps going down to prison, or off into the wilderness. The question is, "Are we ready to go? Are we ready to *quit* laying up treasures on earth and devote our time and money toward helping afflicted humanity, and thus lay up treasures in heaven?" Visions of that afflicted sister follow me day and night.

Some of you may say it is not *all* of us who have time and money to spare But, dear friends, it is not often that it is time and money that are needed. There is scarcely one of you who lives more simply (and I may add as cheaply) as I do when off alone in the cabin in the woods. During the past week my *menu* was a big loaf of nice bread well baked, so that the crumbs would drop off all over the table-cloth when the loaf was cut; frame of honey made by the Caucasian bees quart of milk that I got from one of the neighbors, and some nice butter. Bread and butter and "milk and honey," no cooking, most no dishes to wash—and yet I never joyed my daily food more than I did the and my health was perfect. The open doc way to health, and escape from all of the ills, is plain simple food—not big dinners a lots of servants. If we were to live somethi more as did John the Baptist in this land our that can easily be made to be "a lan flowing with milk and honey," the expen is very small, and there is very little hire help needed.

Now in closing let me touch on one othe point that is as important (or more so) a the food we eat. In crossing Lake Erie I o cupied an upper berth in a little stateroom When I retired, about 9 o'clock, I opene the transom over the door and pushed dow the blinds so the May breezes could come i freely. Nothing but a sheet and a thin co ton coverlid was over me. Some time in th night the occupant of the berth below com plained of a lack of covering. I told him t put his heavy overcoat on the bed; but h did not seem to want to do this, but calle in the steward. This official was quite an im portant personage, with his fine uniform brass buttons, glossy cuffs and collars—a man who had charge of the sleeping-apartment of one of our finest lake steamers worth toward a quarter of a million of dollars This steward shut the transom over the door and raised the glass sash so as to make the room tight, and then started out. I had just rubbed my eyes open, and caught on, as he was about to leave Said I, "My dear sir, I can not consent to sleep in this little room if you shut the windows up like that."

He turned to me in surprise and said, "Why, you are surely not *too warm* when this man here complains of being cold?"

The man who could not sleep with such covering as I had, was a big stout young fellow, weighing toward 200. I weigh only 126, but yet I was quite comfortable and happy. Well, now, this steward, this great official of that great steamer, could not comprehend that anybody should want a window for any other reason than that he was too warm and wanted to be cooled off. Do you see the point? We are a nation of consumptive people just because we sleep, so many of us, in rooms as tight as a bottle with the cork pushed down in securely. This sister of mine says the windows are always open in her bedroom; but, dear friends, this is not enough. If you are strong and well it may do. When I was in feeble health I tested the matter thoroughly. One who is ailing, especially in troubles with the lungs, should be exceedingly careful not to breathe the same air twice —especially the air that other people use. I had inflammation of the lungs when I was a child. I had an attack afterward, almost every winter. The doctors expected me to die all through childhood; but my good mother would not let me die. Now I have

tten all over it, and it is largely by avoiding any sort of closed room. Sleeping out the porch is much better than any room; t out in the open air with just enough protion to keep off storms is better still. If ake my afternoon nap in the cabin in the oods, even with the windows open, there is kely to be a bad taste in my mouth when I vake. If I sleep in a hammock under the ttle clumps of maples on the summit of the ll, overlooking the bay, when I awake my eath is as pure and clean as the air outoors, and my spirits are exuberant accordgly.

Lack of faith, not only on the part of the atient, but lack of faith in the relatives and ttendants, has much to do with it. Open ir and something to occupy the mind and uscles are what is needed. The relatives ust insist on this. There is too much disosition to give up, and say that "even the octors say there is no help." I am well ware that a great deal is being done by eeping the patient in a cold climate or off n the open air up in the mountains, and that ay be all right; but with my habits and disosition I greatly prefer a location in winter here I can be out in the open air from orning till night, and at work at some ocupation I love, without being cumbered with n overcoat, mittens, etc. One in fair health hould be able to keep warm in the open air t a temperature of 40 degrees, with ordiary clothing. Where the wind is too strong would have some sort of windbreak. Clothovered frames are coming to the front in rotecting poultry from storms and cold winds. It is much better than glass sashes; nd cloth-covered cold-frames to keep off the winds that are too severe, are, I am sure, just what consumptive patients need. And then they need to be kept busy at work—busy, *busy*, BUSY. Just as soon as the patient gets tired, let him lie down in a hammock, warmly covered up with woollen blankets. Get along without artificial heat if possible.

As for diet, just now I do not know of any thing better than bread and butter, "milk and honey," and eggs. Dr. Miller has arrived at the point where he can use raw eggs. That would obviate the necessity of lighting a fire to do the cooking—"uncooked food." I suppose we shall have to consider the patient somewhat in regard to this matter of dieting. Let him take that which nature calls for—no stimulants, no medicine. Let milk and eggs be the "stimulant," and bread and honey the diet. It has been intimated that honey in the comb is more wholesome than when extracted. I confess I have a great liking for a little beeswax along with my honey. God will certainly guide us, and enable us to defy the "*giant*" afflicting our loved ones, if we only *let* him guide.

God is our strength.

THE Tustin pure-food bill has been passed by the Senate of Pennsylvania, going through on its final reading without a dissenting vote. Next!

Temperance.

THE BATTLE FOR THE RIGHT.

There are so many good things now coming our way in the line of temperance that I should like to fill my own department with them. Kansas is making a fierce kick to clean out the brewers, bag and baggage; and if they do not get out with a rush their possessions will be speedily confiscated. Other States, especially in the South, are following thick and fast. Express companies—at least two of them—have declared they will no more deliver liquors in dry territory. Respectable periodicals are refusing to advertise for them any more, and the war is on. Are you helping? A printed slip was just put in my hand that hails from Newcomerstown, Ohio. What do you think of it?

SERIOUS QUESTIONS FOR VOTERS.

Do we want saloons? If so, why?

Who of us want them, and for what?

Is time spent in them which could be better spent elsewhere?

Is money spent in them which would do more good spent otherwise?

Is there likely to be gambling in them?

Is any money *worse than wasted* in them?

Do any fathers set bad examples there for their boys?

Do our boys get good habits there that will make them good men, or habits that may make them good-for-nothing men?

Are our wives, mothers, and sisters made happier by having loafing and drinking places to tempt their husbands, sons, and brothers to waste their time and spend their money in drinking and loafing instead of being at home with their families?

Is the saloon a good place to educate the young men who are to be the husbands of our daughters?

If no money were spent in saloons, would there not be more good trade and fewer bad debts in business, and more comfort in homes?

Would anybody be hurt by having these places shut up? If so, who? And how would they be hurt?

Would some men be better off to-day if they had never been in a saloon?

Would some women and children be better fed and better clothed?

Would some homes be happier?

Would anybody who is dead be alive to-day?

Would saloon-keepers themselves, and their families, be better, happier, or more useful in some other business?

Do saloon-keepers want to do us good or to get our money?

Do you like the dictation of the saloons in politics?

Let us think of these questions, and vote as we think is *right*, not as those who only want our money wish us to vote.

A SAMPLE OF THE "LIQUOR LIES."

Of course the liquor-men, and especially the brewers, as the following shows, are putting up a big fight for their lives. It makes one think of that passage, "Why do the heathen rage, and the people imagine a vain thing?" Just look at the following string of falsehoods which I clip from the Cleveland *Leader* of May 14:

Official figures recently compiled in St. Louis, where Sunday closing was forced by Governor Folk, show that crime of the worst sort has increased there under the Sunday-closing law. Why? Because men who want to drink buy bottles of red liquor on Saturday nights and spend the time on Sundays loading up for trouble for themselves and others. When the city was open Sunday these men went to pleasure-resorts or halls with their wives and sweethearts, drank beer, remained sober, and kept away from crime. It is the same old story of shutting off the sale of light drinks like beer, which produce practically no drunkenness, and forcing drinking men to turn to the hip-pocket

practice if they desire stimulants. Which, oh which, is the best?

T. Q. SALOMON.

Cleveland, May 6.

Well, what do you think of the above? I at once wrote to the editor of the *Leader* that, if they were going to give place to such a string of falsehoods, without any footnote or protest, I would at once give my patronage to some other daily paper, even although I had taken the *Leader* the greater part of my life. If all the friends of temperance would give the editors of their home papers to understand that they will not tolerate a periodical in their homes that is evidently in sympathy with the liquor trust, there would soon be more periodicals out and out for temperance, law, and truth.

HE MAKETH THE WRATH OF MAN TO PRAISE HIM.

The liquor periodicals are, it would seem, unwittingly doing us a tremendous service just now. The Cincinnati *Herald and Presbyter* wisely suggests:

An army never knows how well it is succeeding until it knows how badly it is frightening the enemy. Bonfort's *Wine and Spirit Circular*, Louisville, Ky., is one of the ablest and most widely read and quoted liquor-crgans of the United States. In a recent number it devotes a large part of its space to an editorial concerning the Anti-saloon League and the constant headway being made by the league against the liquor-traffic throughout a large part of the country. It says:

With more than half of the geographical limits of this great country under laws prohibiting the sale of alcoholic beverages; with Tennessee passing through her legislature a bill that almost amounts to State prohibition; with the West Virginia legislature passing a measure to submit the prohibition of the manufacture and sale of wines and spirits to a vote of the people; with Texas providing that express companies transporting wines and spirits shall take out a $5000 license; with the Illinois legislature considering a county-unit local-option measure, and Indiana a $1000 license for the few saloons that the Remonstrance law will leave in that State; with Kentucky almost a dry State, and probably facing a prohibitory amendment, and with an organization opposing us and sworn to our destruction, that lacks nothing in the way of money or brains, enthusiasm or persistent untiring work, what (may we ask?) is the wine and spirit trade doing to arrest the current of events or to alter in any way the radical conclusions which are being forced upon the people in every State, county, and precinct?

If there is one thing that seems sett ed beyond question, it is that the retail liquor-trade of this country must either mend its ways materially or be prohibited in all places save the business or tenderloin precincts of our larger cities.

May the Lord be praised that all the above is true, and that the enemy of righteousness recognizes it.

The suggestion that the retail liquor-trade "mend its ways materially" will strike most people as a sensible idea. Certainly there is room for it.

Here, again, we have the following:

"'The results of temperance agitation in the United States have been well summed up by National Superintendent Baker of the Anti-saloon League in the following words: "Thirty-three millions of the people of the United States live in territory where the saloon is legally prohibited, and during the past twelve months two and a half millions of our people have abolished saloons from the territory in which they live. Kentucky, in the past six months, has driven the saloons from twenty-six counties by a majority vote in these counties, of upward of twenty-two thousand, freeing a population of one hundred and fifty thousand from the immediate presence of the saloon. Tennessee has extended the Adams law to the entire State, which means that, within a short time, the saloons will exist in only three or four cities. Alabama has just passed a county local-option law, which, it is predicted, will abolish the saloons from all but three of the counties within the next two years."

'Since these words were uttered, Colorado's new local-option law has been signed by Governor Buchtel, and the outlook is more optimistic than ever.'"

While I rejoice to see what the Department of Agriculture is doing for the farmer in the way of sending out bulletins free of charge, I do not rejoice to see one on hop-growing, with a report of the beer industry in the back part of it. See the following:

BEER INDUSTRY.

The three principal beer-producing countries are Germany, the United Kingdom, and the United States. It is only within the last two years that the beer production of the United States has exceeded that of the United Kingdom. This rapid increase in the United States is due both to the rapid increase in the population and to increased consumption per capita. In the year beginning July 1, 1905, the beer production was nearly 55,000,000 barrels.

If the increase in the United States is as great in the future as it has been in the past, the production of the United States will soon equal that of Germany. This would indicate that there will be an increased demand for hops at home.

Well, I have been through this whole bulletin of 34 pages quite thoroughly; and although it is sent out this year, 1907, I can not find a single line in recognition of the general war that is being waged against beer and breweries throughout our land at the present time. I am sure that thousands of good honest hearts will join with me when I say it is a burning shame and an insult to our Christianity to see a bulletin sent out from the head of our nation, placing the manufacture of beer on an equal footing with other agricultural lines, and totally ignoring the awful wreck and ruin that follow the beer trade wherever it is introduced. What is the matter with the scientific authorities at the head of our nation? Have they, like Rip Van Winkle, been asleep while something like half of our people and half of our territory have been emancipated from the thralldom of the liquor-traffic?

The *New York Weekly Witness* says: "For revenue England has for a century poisoned and demoralized China with opium, and now India with alcohol. And by tobacco, in the form of cigarettes principally, it is rapidly sapping out the young life of Great Britain." Do our rulers reckon that the revenue of our country is a greater asset than our young manhood? Do they forget that righteousness alone exalteth a nation?

THE GAMBLER AND HIS OCCUPATION.

Of all the occupations that men pursue, the occupation of the professional gambler is probably the only one that has not a single redeeming feature. There are many pursuits of life that are comparatively offensive that are, nevertheless, necessary to public comfort.

The occupation of the gambler, however, contributes nothing. Nothing grows under his touch; not a blade of grass nor a tree nor a flower yields its beauty or its fragrance as a result of his profession. The deadly Upas tree sheds about it no more fatal poison than the influence the gambler exerts. Not a dollar that he earns is honestly earned. When he has passed his career the only truthful epitaph that can be written on his tombstone is that the world would have been better if he had never been born.—*Judge Freeman's charge to the Lincoln Co. (New Mexico) Grand Jury in 1893.*

CATCHING THEM ON "THE FLY."

By the way, I am just starting in the bee business, and have been reading your nice little magazine for some time past. The swarming bees all fly to the West in this country; and as I live on the west bank of the Mississippi a great many colonies cross the river and land in the trees on our bluff. That is the way I expect to get my start in the bee business.

Burlington, Iowa. J. W. MURPHY.

Wire poultry netting, recently offered in this department, is all sold.

SWEET-CLOVER SEED.

We receive numerous inquiries from our readers, asking where they can get sweet-clover seed. We have on hand here, also in Chicago, the unhulled white at 22 cts. per lb., postpaid; 10 lbs. for $1.00 by express or freight; 100 lbs. for $8.00, bag included. We have here also the hulled white at 8 cts. per lb. extra.

YELLOW SWEET-CLOVER SEED.

Just before going to press we have located some yellow sweet-clover seed in South Carolina, which we have secured to supply orders. Until further notice the price will be 30 cts. per lb., postpaid; 10 lbs., by express or freight, for $1.80; 100 lbs., $16.00.

JAPANESE BUCKWHEAT.

We have a very limited supply of Japanese buckwheat seed. If any one reading this knows of a stock of choice seed for sale we should be pleased to hear of it. Until further notice we shall have to make our price, including bag to ship in, 40 cts. per peck; 75 cts. per ½ bushel; $1.40 per bushel; $2.50 for two bushels.

OUR COVER PAGE.

The cover page of GLEANINGS for this issue represents the tropic zone. The broad-leaved plants are probably plantains—a near relative of the banana. Both are honey-plants. The banana fruit is also represented just as it grows, seemingly upside down to persons unacquainted with it.

DAISY WHEELBARROWS.

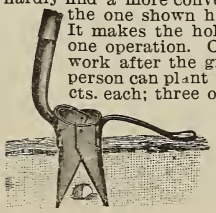
We have just received a carload of wheelbarrows from the factory, which are quite an improvement on the last carload previous to this. They cost us more, and the price should be raised to $4.00 each, and they will be so listed in the next edition of our catalog. For the present we will furnish them at the same price at which we have been selling—$3.50 each.

FACTS ABOUT BEES.

This little book, describing the Danzenbaker hive and system, has been out of print for several months. We have entirely rewritten it, and published a new edition which is just completed and ready for mailing. It is somewhat enlarged, and printed on enameled paper, and we have placed a price on it of 10 cents. The applications we have on file will be filled as fast as possible, regardless of price. In size and contents we believe it will be considered a valuable book at the price.

ACME HAND POTATO-PLANTER.

The time is here for potato-planting, and you will hardly find a more convenient tool for planting than the one shown here, especially in light soil. It makes the holes, and drops and covers at one operation. Once over the field does the work after the ground has been fitted. One person can plant two acres in a day. Price 55 cts. each; three or more at 50 cts.; a crate of one dozen for $5.25. We also have special bags fitted with straps for holding the potatoes while using the planter, which we can furnish at 50 c. each, or $4.50 per dozen.



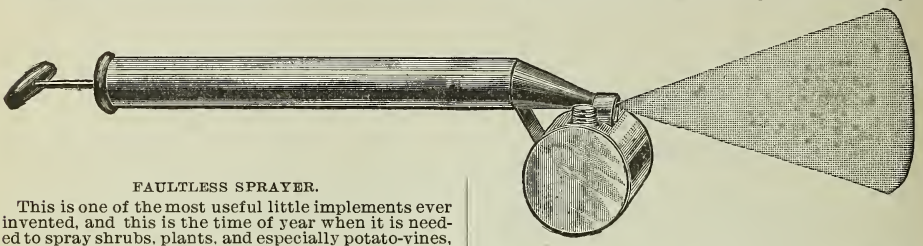
BEES FOR SALE.

Owing to spring losses there should be a large demand for bees. We have a carload available at Floresville, Texas. They are Italian, three and five banded stock, in ten-frame Dovetailed hives, Hoffman frames wired, and combs built on foundation. We offer them, including queens, shipped direct from Floresville, at $6.00 per colony; 5 or more colonies at $5.00 each, or a full carload of 300 at $4.25. This is for prompt acceptance, and subject to previous sale.

A B C OF BEE CULTURE.

Our stock of the last (1905) edition of the A B C of Bee Culture is getting very low, and we have been cutting down on all large orders for some time to make the stock last as long as possible. We have got fairly started on the new edition; but with the great amount of work necessary to complete it we shall hardly have any ready to furnish before September at least, and it may be later. If any dealers or agents or others have extra copies which you are not likely to dispose of before the new edition is ready, will you kindly notify us, and we will furnish orders for them.

The new edition is being printed on enameled book paper, and will be about one-fourth heavier than any former edition It will be by all odds the finest edition ever issued. It will cost us more than 25 per cent more to produce it, and we have decided to increase the price to $1.50 postpaid, or $1.25 shipped with other goods. Orders already booked for the new edition at the old price will, of course, be filled. The wholesale and jobbing price is also advanced in proportion.



FAULTLESS SPRAYER.

This is one of the most useful little implements ever invented, and this is the time of year when it is needed to spray shrubs, plants, and especially potato-vines, to kill the bugs. It is also used as a kerosene spray on cattle to keep off flies. They are so cheap that you should have several, each loaded with the different mixtures needed for various purposes. We have some 20 to 30 dozen, which we offer, to close out, at 27 cts. each; three for 75 cts.; $2.50 per dozen, made all of tin. With galvanized-iron tank, 35 cts. each; three for $1.00; $3.50 per dozen. We could not replace this stock to sell at these prices. Some of our dealers also have a supply on hand.

BEESWAX LOWER.

One effect of the cold late spring with its consequent loss of bees by spring dwindling has been to cut off to a great extent the demand for comb foundation, and also to increase the amount of beeswax available. By the law of supply and demand, this depresses the price; and this depression, like the advance, comes earlier than usual this year. We have a large surplus stock, and will pay, till further notice, 30 cts. cash, 32 cts. trade, delivered here or at our branch offices.

QUEEN ORDERS DELAYED.

The continued cold weather through the month of April and past the first week of May has made it impossible to begin queen-rearing here, and we learn from breeders as far south as Florida that weather conditions have been very unfavorable. As a result, orders booked for queens for delivery this and next month are bound to be delayed. Queen-breeders must have warm sunny weather for the successful rearing of queens; and those who have placed their orders will have to exercise unusual patience this spring. This is especially true of orders for untested queens. Of course, queens which have been wintered over can be supplied in suitable weather as soon as they can be spared. Many colonies are in a reduced condition from loss of bees and interruption to brood-rearing during the cold spring weather.

SECOND-HAND FOUNDATION-MILLS.

We have the following second-hand comb-foundation mills to offer. We give a brief description of each, and shall be pleased to mail a sample of foundation, representing any one or more of these mills, to those interested, on application:

No. 082, 2½x10 medium-brood mill, round cell, late-style frame, in good condition. Price $15.00.

No. 083 2½x10 medium-brood hex. mill, late-style frame, in good condition. Price $16.00.

No. 2275, 2½x6 hex. thin-super mill, in good condition. Price $11.00.

No. 078, 2½x6 hex. thin-super mill, in extra good condition. Price $12.50.

No. 079, 2½x6 hex. thin-super mill, in extra good condition. Price $12.50.

No. 085, 2¼x6 hex. thin-super mill, in good condition. Price $12.00.

No. 086, 2½x6 hex. extra-thin-super mill, in good condition. Price $12.00.

No. 087, 2¼x10 hex. light-brood mill, in fine condition. Price $15.00.

No. 088, 2¼x12 old-style Dunham round-cell mill, for heavy brood, in fair condition. Price $14.00.

SPECIAL BARGAINS IN OLD-STYLE STOCK.

We are making some special offers on some old-style goods at some of our branches, which we desire to close out. There are some who prefer some of these older patterns to those adopted since, as we frequently find. To such this is an excellent chance to secure some goods of your choice at special prices.

At our Washington branch we offer:

77 eight-frame covers, Danz., flat metal-bound, which were standard three or four years ago. They are put together, all ready for use when painted. Price 25 cts. each; 10 for $2.20, or the lot at 20 cts. each.

197 ten-frame size, same style, at same price.

60 eight-frame and 32 ten-frame bottom-boards, Danz. style of 1903, with metal-bound tilting floor-board—very convenient for cleaning. Price of either size, 20 cts. each; $1.70 for ten, or 15 cts. each for the lot.

50 hive-stands with slanting front, not now listed in our catalog. Price 12 cts. each; $1.00 for 10.

25 hive-stands of an older pattern, without slanting front. Price 10 cts. each; 80 cts. for 10.

At our Philadelphia branch we offer:

89 eight-frame and 500 ten-frame Danz. flat covers, metal bound on ends, same as those at Washington. Price 25 cts. each; $2.20 for 10; $20.00 for 100.

10,000 thick-top staple-spaced frames, with end and bottom bars ⅞ wide by ¼ inch thick; otherwise they are just like our present style. Price $2.25 per 100; $10 per case of 500.

Of our regular pattern, all-wood frames, we have an overstock, which we offer, to reduce it, at $1.75 per 100; $7.50 per box of 500.

An overstock of regular B. bottoms, ten-frame size, not reversible, 20 cts. each; $1.80 for 10; $17.00 per 100.

Overstock of 10-inch 4-row shipping-cases, with 3-inch glass, at $8.00 per crate of 50; hold 24 sections, 4¼ x1½ plain; also of 10-inch 2-row shipping-cases, with 3-inch glass, at $4.50 per crate of 50.

We have at Chicago several hundred slotted section-holders, nailed, which have been used and taken back in exchange for other style of fixtures. These new cost $2.00 per 100 in the flat. We offer these nailed, ready for use, packed for shipment, at $1.25 per 100, while they last. While they are somewhat stained with propolis from use, they are a bargain at this price to any one needing this style of section-holder.

We have in stock in Ogden, Utah, to dispose of, 300 thick-top staple-spaced frames at $2.50 per 100; 300 all-wood frames at $2.00 per 100; 2 No. 4 Novice extractors at $8.50 each; 1 bee-tent at $1.75; 250 folding cartons for 4¼ x 1⅞ sections, $1.25; 1000 cartons, wrappers, labels, etc., for brick honey, at $10.00. These goods are offered free on board at Ogden at catalog prices as above, less 10 per cent discount for prompt cash order to close out the stock quick.

Special Notices by A. I. Root.

ALL ABOUT BEANS.

This is a nicely illustrated pamphlet of 28 pages, and it would be well worth while for those who grow beans of any sort to any extent to send to the Department of Agriculture, Washington, and ask for "Bean Bulletin No. 289," just issued.

THE SPENCER SEEDLESS APPLE.

At least one of our subscribers (I hope there are no more) has invested $2.00 in a Spencer seedless-apple tree. With the wide publicity that has been given through almost all of the agricultural press, warning people against this much-advertised fraud (for it is little else) one can not help wondering how they can make sales of an apple (called by experts inferior to the Ben Davis), at $2.00 a tree. My good friends, it will pay you well to take the *Rural New-Yorker* on account of its exposé of humbugs along their line, if for no other reason.

THE PARADISE SWEET WINTER APPLE.

In answer to many inquiries, the Storrs & Harrison Co., of Painesville, O., can furnish trees of this variety in the proper season at 25 cents each, or $2.00 for ten. Perhaps I might remark that, after our apples of this variety were all gone, I tried some other sorts, or such other sorts as I could get hold of at this season of the year; but so far I have not found any other apple that I can eat with impunity a little before bedtime, as I always do (in the spring) the Paradise winter sweet. The tree is a rank grower and a great bearer; but the apples are not fit to eat in the fall, even if they do *look* as if they were ripe.

INCUBATION AND INCUBATORS.

The above is the title of an exceedingly interesting bulletin of 31 pages, sent out by the Department of Agriculture, and mailed free to any applicant. Address Secretary of Agriculture, Washington, D. C., and ask for Farmers' Bulletin No. 236. I regard this bulletin as especially valuable because it is written by an expert who is not biased in any way in favor of any particular incubator. The instructions are sound in every respect, and it gives many hints of great value to me that I never got from any incubator catalog. The writer says, "The bill opens and shuts about the 15th day, and the cry of the chick is heard about the 18th day." Now, I have listened to eggs in incubators, and to those under a sitting hen, most intently, all along up to the time they began to break, but I never heard a sound until some time during the 20th day, and then it was just as the shell began to break open.

SOME NEW BOOKS ON GARDENING.

The O. Judd Co. have just submitted to us samples of three new books—Bean Culture, Celery Culture, and Tomato Culture. They are all handsomely bound in cloth, fully illustrated, about 150 pages each, beautiful print and paper, and the price is only 50 cents postpaid. These handsome books are somewhat of a rebuke to some of the cheap paper pamphlets that are sent out as fifty-cent books. I refer particularly to some of the poultry-books. When I pay 50 cents I expect to get quite a good-sized book, but I have been disappointed several times of late by receiving for my money only a cheap paper pamphlet, oftentimes printed on poor paper, poor print, and only a few small pages at that. I know the authors make as an excuse for these big prices the value of the contents of the book; but the books put out by the O. Judd Co. contain about as much valuable matter, and are as well up to date, as any of the other books I have mentioned.

The book on tomatoes not only contains every thing up to date in regard to growing a crop, but it includes growing tomatoes under glass, and it discusses all the latest diseases and insects, and refutes the ancient legend that tomatoes induce cancer, etc.

The book on celery culture is equally exhaustive. It also includes celery-growing in Florida that has grown up to such proportions in different parts of that State. The half-tone cuts are some of the very finest of the kind.

The book on bean culture discusses not only the beans that grow in the garden, but bean-growing as a great farm industry in growing snap beans in the Southern States for the Northern markets.

All three of the books are out this present year of 1907. They will be mailed from this office on receipt of price.